# AMERICAN VETERINARY REVIEW

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# AMERICAN VETERINARY REVIEW.

APRIL, 1915.

## EDITORIAL.

### EUROPEAN CHRONICLES.

Bois-Jerome, 15th February, 1915.

THE WAR AND VETERINARY SCIENCE: I have already made some allusions relating to the war, which has already done so much harm and brought so much misery, and I do not intend to bring this sad subject before our readers. But there are facts which must present themselves to many thinkers, and of those I may be allowed to consider a few.

INTERNATIONAL CONGRESSES: What interests the veterinarian is of course those great gatherings of our profession, that Gamgee instituted, and which by the effects of the war arrived after many grand successes to the collapse of 1914 of the 10th congress, which was to be held in London last August.

Among the last echoes of this unfortunate event, I read the report made by Prof. Dewar before the Scottish Metropolitan Veterinary Medical Society. Read how sadly concise this reporter had to speak:

"The International Veterinary Congress fixed to be held in London from the 3d to the 8th of August, met on a Monday and the proceedings went on much as had been expected, and there was nothing to lead one to suppose that the Congress would not go on. But war was in the air, and even at the first meeting there were no German representatives nor an official French representative. There were representatives from nearly every other country, including Russia. The situation got more critical, and it was evident when they met on the Tuesday morning that there was little use going on with the proceedings. The Council met on

Tuesday to do what was necessary in the way of winding up the Congress. There was hardly a single foreign representative on the Tuesday, and even a large number of the British members attending the conference had by that time got notice that they should have to leave to join their regiments. With little ceremony, therefore, the proceedings were brought to a close. No indication was given as to the course to be followed next."

Does this last phrase mean that no steps for further congress have been taken—that no international veterinary gatherings should ever be had again—and that the great benefits that the profession derives from them were for ever to be buried under the terrific countless cadavers of those who had died for their country?

Those questions are very difficult to answer, and yet they certainly have occupied the attention of many.

In a leader of the *Veterinary Record* the subject is considered. And if the answer is not positive as to the future of the International Congress, the writer says that " it is anticipated, and not without reason, that the war will cause a long suspension of the work of the International Veterinary Congress." Time will tell.

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But if international gatherings will suffer, if even the few years which separate one from another are not sufficient to improve the conditions and feelings of the members of the veterinary profession, if in other words the members of that large family were not likely to, once every four or five years as of old, meet together, there are some important facts which will rise from the very condition of the war, among which will be a more intimate international veterinary intercourse, which is rising now between veterinarians at the front who belong to the various armies.

The writer in the *Record* points this out in excellent terms, and while he alludes to English veterinarians now in the service and at the front, he says:

"Our members are most likely to come into touch with French and Belgian veterinary surgeons. We all know the high veterinary position that France has occupied ever since she established the earliest of veterinary colleges more than 150 years ago. It may not be generally known that Belgium also ranks high in a veterinary sense. * * * Russia, in veterinary matters, as in many other respects, is still rather an undiscovered quantity to most of us. But we believe that the veterinary standard is as high in Russia as in any other country, and that the profession occupies a good position there. * * * Turning from friends to foes, we find some variation in the veterinary calibre of our opponents. Every one will admit the high position of Germany, and some very good work has been done in Hungary, but for some reason that is not very apparent, veterinary science has never flourished greatly in Austria."

From all these foreign veterinarians mingling together much benefit can be derived by one and all through the observations of the mixed practice of those various scientists. And again, if other nations should be involved in the war, the veterinary methods of these countries will be of great value. Good work has been done, and the reputation that veterinary science has gained in Holland, Italy, Denmark, Switzerland, Roumania, Sweden will entitle their veterinarians to union with their brethren of similar profession.

A union which may be as *grandiose,* as imposing as that which could not be found in an international gathering, but which will be more friendly, more intimate, more from the heart of men and nevertheless more solid and more lasting.

Friendship born before danger is often more firm than when arising in any other way.

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AZOTURIA: The bibliography of this disease is very large—and from the very first day when, years and years ago, observations were recorded, when every discovery made in relation to it were presented, and as time went by and records and descrip-

tions were observed and presented to veterinarians, it seemed that everything worth knowing about azoturia was no longer a secret.

Of course many were the theories relating to it, to its pathogeny, to its etiology and as a consequence of the many interpretations, of the various localizations of the lesions found by the inquirers, the nomenclature was very varied, making its bibliography difficult to follow. Indeed, to mention but a few of the names which have been given to it and by which it has been known to many, may be mentioned, according to Cadeac, those of: "*Congestion of the spinal cord, tracheal neuropathy, spino-renal congestion, epizootic paraplegia, lumbago, femoral neuritis, paroxotic hemoglobinuria à frigore, nephritis, acute Bright's disease, azoturia, black strangling, muscular congestion, pelvic contractions, spinal and lumbar typhus, renal typhus, hemoglobinuria, rheumatismal hemoglobinuria, apoplectic anthrax, muscular apoplexy,* etc."

And yet, with such nomenclature a simple general idea of its nature is given by that concise definition that Cadeac gives of it, in the second edition of his *Internal Pathology:*

"Paroxystic muscular hemoglobinuria is an auto-intoxication with always sudden invasion, striking the animal as it comes out of the stable or while working, after he has been laid up, and which is characterized by the presence of dark urine, stiffness of the extremities, swelling of contracted muscles, with powerless locomotion, followed or not by a fall."

This definition resumes pretty thoroughly, though generally, the essential character of the disease. But how well these symptoms are described in the writings alluded to and in the classical works offered to the students and practitioners.

And yet it seems as though more can be written on azoturia.

In that excellent weekly periodical, the *Veterinary News,* from which I so often gather, Mr. E. Wallis Hoare, F.R.C.V.S., has published a long article resuming the whole subject in all its peculiar aspects, the etiology, pathogeny, symptomatology with the muscular phenomena, the course, duration and prognosis. The differential diagnosis with the essential importance of the

history of the case and with which it can be readily established so as to distinguish it from uremia, acute infectious diseases or intoxications, colics, thrombosis of the posterior aorta or again from infectious paraplegia.

The article of Mr. Hoare is completed with the treatment, where he begins saying:

"As nothing definite is known with reference to the pathology of azoturia, the treatment of the affection is largely empirical."

But yet a complete review is given of the various remedies that have been advocated and of the various methods resorted to. If curative treatment is full considered, the preventive is also well described and the general hygienic attentions that are imposed find there their place.

Contrary to what Cadeac says, that "hemoglobinemia is special to horses and is not observed in donkeys or mules," Hoare closes his article with a few lines on azoturia of cattle.

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In connection with this disease, I find that at a meeting of the Academie des Sciences in Paris, Mr. Jules Blier read a paper on a disease which he names *bovine hemoglobinuria,* which he has observed in Chili, where it is known as *Meada de Sangre.*

This affection, which prevails among the herds of cattle and kills about 5 per cent. of the adult animals, runs its course generally in 48 hours, and almost always ends in death. It is characterized by the presence and escape of hemoglobinuric urine accompanied with fever, exophthalmia, raving actions, vertigo, generalized icterism, bloody nasal rejections and often bloody urine.

When an animal is killed at the onset of the hemoglobinuric crisis, symptoms are observed that resemble much those of yellow fever of men yellowish coloration of the meat and serous membranes, blood in the gastric reservoirs, hypertrophy of the biliary bladder with hemoglobinuria, liver in state of yellowish degeneration, later local small hemorrhagic spots the size of peas in which the parasite of the disease is discovered.

There are also cases where there is hypertrophy of the spleen, deep alterations of the super-renal capsulae, subcutaneous hemorrhages and often on the diaphragm a true roseola.

The specific microbe of this disease disappears before the death of the animal. And for that reason it has escaped attention for a long time; even to this day.

The microbe of *Mcada de Sangre* discovered by Blier in every instance he has looked for it in animals killed at the outset of the disease, brings at first sight the idea of spirilla, from which it differs by a plasticity, which permits a great contraction.

That the microbe is the agent of the disease is proved by Blier, by taking small hemorrhagic lesions of the liver from an animal killed at the beginning of the disease and after disensibilizing it by washing for fifteen minutes in tepid sterile bouillon and inoculating it in the abdominal cavity of a fresh steer, he has succeeded in reproducing the disease, although in a milder form. The incubation of the disease is from five to six days when the microbe can be found in the blood.

The transmission is possible only at the beginning of the disease—and like yellow fever, young animals are never affected and often the transmitted disease recovers.

Evidently the name of hemoglobinuria will scarcely apply properly to the disease of Chili.

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TREATMENT OF WOUNDS: The war has brought this subject once more before the medical world. And if the articles referring to it are still only few in veterinary publications, some medical papers contain numerous allusions, which form a general point of view are of valuable importance, and in a general scientific medical sense, are interesting to both veterinarians and physicians.

I will here allude to two principal kinds of wounds very frequently met at present as sequelae of war.

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TETANUS: As can be expected this horrid complication of wounds occupies a first rank, and whether it is in the *Revue Veterinaire* of Toulouse or in the *Presse Medicale,* we find communications relating to it.

In the former, Prof. Bru, and in the latter Prof. Chaput, speak of the preventive treatment, which before anything else almost must be taken into consideration, bearing in mind the enormous facility with which wounds can be infected.

For us, veterinarians, who know already the brilliant results that have been obtained in that direction and almost leaving aside all other questions, the question of " must a preventive injection of antitetanic serum be made " is one that must be always answered in the affirmative. Its capital importance, its never-failing success are vouchers for it.

But with it, and on this all writers insist, the earliest and most radical disinfection of all kinds of wounds is of immediate necessity. And specially must this be applied in cases where one has to attend to deep, anfractuous, purulent injuries.

And then comes the cleaning of those wounds, of their borders, the removal of all torn, lacerated tissues, necrotic parts, etc., etc., all in fact that pertain to the antiseptic condition of the wounds.

Iodoform, tincture of iodine, peroxyde of zinc or of bismuth, picric acid solution, carbolic washings, boiled water, oxygenated water, pheno salyl, etc., etc., form an arsenal from which one can readily draw. I will probably have occasion to refer later to the curative treatment.

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GANGRENE: In ordinary practice this complication of wounds is not frequently met with. Yet there are circumstances where one may, when least expecting it, meet with a wound which by its peculiar aspect and specific odor, tells him that mortification of tissues is going on—and he then often finds himself disarmed or unprepared to meet this terrible foe. Truly there are some

which may be rapidly resorted to, but new remedies are not to be ignored.

Dr. Paul Ravaut calls in the *Presse Medicale,* the attention to a new form of treatment of gangrenous wounds, with intravenous injections and local applications of arsenobenzol in solution of 1 gram 20 for 1 litre of boiled water. He had already published articles where he had recommended this therapeutic for some septic gangrenes and for that of a pulmonary nature; and recently recorded the success which was obtained in two serious cases of gangrenous wounds, differing one from the other.

In the first, there was a superficial wound which had rapidly become gangrenous, without giving rise to changes in the general condition of the patient. A simple local treatment by the application of a dressing moistened with solution of arseniobenzol was sufficient to produce a change, in twenty-four hours, in the gangrenous aspect of the wound.

In the second case, there was a very deep wound, lacerated, with necrosis of torn muscles and very bad general condition. This was treated with intravenous injections and local applications. The result was also wonderful and recovery obtained in a very short time.

Although the results obtained by Dr. Ravaut are but very few, they are of sufficient value to deserve the attention and indicate the trial of the new treatment.

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Cancer of Plants: At one of the latest meetings of the *Société de Pathologie Comparée,* Mr. René Rigamey has presented a very interesting communcation relating to some researches he has made on the micro-organism of the cancer of plants, a subject which had already been the object of a most valuable papers presented at the first International Congress of Pathologie Comparée, held in Paris in 1902. The paper was from Doctor Erwin Smith, an American, and treated of the investigations which he had made on vegetal cancer.

In his article, Mr. R. Rigamey says: "I have studied first the tumor of some young oak trees. Four of these were the subject of his researches. The first, the biggest, was on the trunk of the tree; the bark all round it was burst and the growth had the appearance of a granular sphere, half way out of the substance of the branch. Further up than this first tumor, at the origin of leaves, there were similar tumours, smaller, and one of the leaves was altogether invaded by the disease and had smaller tubercles growing on its stem. A section made between two tumours showed a small black spot, visible to the naked eye, which, examined under the microscope, exhibited a mass of abnormal cells, without symmetrical arrangement, of very different sizes, entirely absent in some places and with the stem of the branch hollowed.

A similar cord of altered cells united together all the tumors of the plant and extended a little beyond them in the tissues of the branch. Below the primitive growth, the cellular structure of the stem was normal.

Thus the plant presented a well-marked case of vegetal cancer, viz., of tumors, invading gradually the entire affected plant and stopping only with the death of the subject.

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Having read and studied the previous work of Dr. Erwin Smith, Mr. R. Rigamey asked himself if the bacterium tumefaciens was the cause of the disease of the oak tree, he had himself studied, and he then undertook to isolate it.

His work is quite interesting and will no doubt prove so to other investigators. The surface of the original tumour was sterilized, sections of it were made, pieces were crushed in sterilized water, cultures were made and finally the vibrio which had developed could be examined. Morphologically it is identical to the coma vibrio of dental tart, has a cil on the concave side, colors well with phenicated fuscin and basic colors of aniline, does not take the Gram. It has a very great vitality, is

rare in the sections of the tumours and its coloration in the tissues is, like the B. tumefaciens, difficult to obtain.

A pure culture of the vibrio inoculated to healthy plants gives a primary growth at the point of inoculation after 15 days and secondary ones after about three months.

The experiment made a number of times has been successful 12 times. The primary tumours are apparent 15 days after the inoculation. They grow until they are as large and even larger than the branch of the tree. The secondary tumours are smaller, always appearing at the origin of the leaves. Some times they invade one leaf entirely. They began by a series of small granulations, which soon gather and unite into one large granulating mass.

Examination of fresh sections of the tumor shows that the parasite is intracellular. It is difficult to detect—it has very little or no motility.

To resume, Mr. R. Rigamey says that he has realized the pure culture of a vibrio which, inoculated to young, rapidly growing plants gives rise to like proliferating tumours in the proportion of 18 out of 20. The disease which is thus produced differs from that studied by Dr. Smith.

Is there a relation between human and vegetal cancer? This is a question which may rise and follows from the paper of Mr. R. Rigamey.

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A. L.

## RETROSPECTIVE—PROSPECTIVE.

In entering upon a new year's work, we unconsciously look back over the year just ended, to see what has been accomplished and how well our efforts have succeeded in meeting the requirements of our subscribers—our readers—our supporters. And while it is a perfectly legitimate ambition to aim at perfection in anything that we undertake, we cannot hope to realize such a state (if for no other reason), on account of individual ideals on the part of those to whom to offer our work; which is particularly applicable to journalism, and peculiarly class journalism. We are extremely gratified, however, at the result of our efforts during the past year (April, 1914 to 1915) at our success in meeting the demands of the American veterinary profession, as exemplified by its continued support, and encouragement, in the form of renewed subscriptions and appreciative words. In the year just ended (Volumes XLV and XLVI), we have given to our readers, among other things, more than a hundred editorials on current veterinary affairs in both this country and Europe, a like number of original articles by veterinarians and medical men from amongst the most advanced scientists in the country, about twice that number of case reports, including those from European practitioners (many of which were accompanied by post-mortem findings), reviewed most of the new veterinary and other scientific works of interest to the veterinary profession that have been published during the year, and published the proceedings of more than fifty society meetings; besides a great amount of correspondence and important news; using over eighty cuts to illustrate the articles published. That our efforts have met with a measure of success is demonstrated by the promptness with which the profession has subscribed its support, both financial and moral, for the year upon which we are just entering. For not only has there been a most encouraging influx of subscriptions during the month just past, but the majority of them have contained kind and earnest words of appreciation. We shall not, of course, inflict upon our readers the reproduction of these

letters in an editorial, but their general tone may be suggested. For example, from away up in Northwestern Canada, we hear: "It is one of the best veterinary papers, both in European countries and North America." And again from a president of one of the state associations: "We have noted with much pride and very great pleasure, that the REVIEW has at all times and under all conditions assisted us, by publishing everything in the interest of our work. This goes to prove that which I have so vigorously maintained in talking with our members regarding journals; *i. e.*, that the REVIEW is managed in the interest of veterinarians; that it is an authority; prints only good, sound, reliable reading matter, and that it is a standard. It is a peer in the very best grade of veterinary journalism. Long may it live and prosper, to the benefit of our profession." Such appreciation of our accomplishment of some of the things that it has been our effort to do, coming unsought from a gentleman whose earnest interest in the uplift of the profession in his state has won the confidence of his *confrères* to such an extent that he has been maintained as an officer of their state organization for the past six or eight consecutive years, should of itself be sufficiently inspiring to start us out on the coming year's work with the assurance that honest effort, in the production of a clean, ethical, veterinary periodical, covering the fields of scientific and practical veterinary medicine, is fully appreciated by the profession it aims to serve. In acknowledgment of its hearty support, we wish to assure the veterinary profession of North America, and foreign countries, that there will be no relaxation of our energy during the year upon which we are just entering, to maintain the high standard of the REVIEW which they so fully appreciate, and to remind them that it can only be accomplished with their continued co-operation. Their financial and moral support are two *very great* essentials, but it is equally important that we have their *literary contributions*. We are continuously giving of the best of our energy, both mental and physical, every day in the year, and we only ask of *you* a record of your interesting cases, and of your thoughts upon subjects of interest to

your chosen profession. You know how you watch for your number around the first of the month, and how you devour its contents! Your brothers in the profession have furnished you that pleasure and enlightenment. Be sure this very month that *you* furnish your brothers with something of interest and benefit to them. Endeavor to fully realize the *absolute necessity* of such a reciprocal spirit to the success of a periodical of this kind. Feel that the use of its pages in enabling you to put into practice this reciprocity between yourself and your brother practitioners in building up the profession for your common good, is rather a privilege than a task, and that by availing yourself of it, you are fulfilling a duty to yourself and to your profession, that gives you a stronger hold upon it, and makes you a more substantial member of it, whose name goes down into history as one of the faithful who has given of his thought and of his energy in the building of the edifice of pathological science. And so with the spirit of reciprocity quickened in you, as it is in us, we enter upon Volume XLVII, determined to make it the very best that has yet been produced.

## AGAIN THE GOLDEN WEST.

The A. V. M. A. to return to the land of the poppies, fruit, sunshine and good-fellowship for the 1915 meeting; just as its members of the Pacific slope planned that it would when we were there five years ago. In response to the repeated enthusiastic outbursts of pleasure from the members and ladies who were fortunate enough to have been part of that wonderful first trip to the coast, our lavish hosts would reply, "you will be back here in 1915 at the time of the exposition." And so it has come about that the A. V. M. A. is to meet in California again this year; perhaps in San Francisco, perhaps in Oakland or in Berkeley; but at any rate, in California. And the following local committee recently appointed by President Marshall, coupled with the climatic conditions that prevail in California in August and September, insures to the members, ladies and other attend-

ants of the 1915 meeting of the A. V. M. A., all that can be desired in the way of hospitality, pleasure and comfort. Of course the exact dates of the meeting will be arranged by the local committee to the best advantage; but according to the by-laws of the organization, the choice will be made to include some time between the 15th of August and the end of the first week in September. If a choice is made before we finally close up our forms, we will add the dates and city chosen for the place of meeting. The local committee are: Dr. C. M. Haring (Chairman, Berkeley; Dr. R. A. Archibald, Oakland; Dr. David F. Fox, Sacramento; Dr. Charles Keane, Sacramento; Dr. Otis A. Longley, Frenso; Dr. P. H. Browning, San Jose; Dr. W. A. Boucher, Pasadena; Dr. A. D. Hubbell, Los Angeles; Dr. George Hart, Los Angeles; Dr. F. J. Ast, San Francisco; Dr. L. A. Danielson, Madera.

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[ADDENDUM]—Since the above was in type, we received from Secretary Mayo a copy of a letter addressed to the chairman of the executive committee of the A. V. M. A., from the chairman of the California Committee on A. V. M. A. Affairs, recommending Oakland as the convention city of the 1915 meeting, and the week beginning August 30 as the time at which it be held. The reasons given for such recommendation, as fully explained on page 99 of this issue, would seem to make both time and place ideal; and we trust there will be no reason why it cannot be accepted as final by the executive committee.

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IDAHO ASSOCIATION OF VETERINARY GRADUATES: At the annual meeting recently held at Boise, Idaho, the following officers were elected for the ensuing year: President, Dr. F. E. Freeman, of Buhl; Vice-President, Dr. H. M. Williams, of Idaho Falls; Secretary, Dr. J. R. Fuller, of Weiser; Treasurer, Dr. R. P. Smith, of Wendell. Idaho Falls was chosen as the place for the next meeting.

# ORIGINAL ARTICLES.

## REPORT OF THE OFFICIAL TOUR OF EUROPE OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION TO ATTEND THE INTERNATIONAL VETERINARY CONGRESS AT LONDON, 1914.

By Adolph Eichhorn, Washington, D. C., and C. J. Marshall, Philadelphia, Pa.

(*Continued from March Issue.*)

### Paris to Berne, Switzerland.

The journey from Paris to Berne was undertaken in daylight to afford us the advantage of seeing the country of France as well as the scenery of Switzerland. The journey consumed about nine hours, during which the most varied kind of scenery presented itself. At first we passed through a fertile farming region of France, but soon the character of the country began to change and our train ushered us into a beautiful valley with glimpses of a rolling country surrounding it. Harvesting was in full progress, and many women were noted to be busily engaged side by side with the men in gathering the fruits of their year's labor. Agricultural machinery is not used to any great extent in France, judging from our own observation.

A very limited amount of live stock was seen throughout this trip, and as we neared the French southwest border the few cows which were seen were mostly of the Swiss types.

In entering Switzerland there was at first very little change in the appearance of the country, but as soon as the train climbed to a higher elevation a most beautiful view of Swiss scenery presented itself to our eyes. In the distance the lake of Neuchatel appeared before us with a city at the foot of the hill just back of it. The farms in this locality were small, but appeared highly cultivated. On the hillsides where one would not expect it worth while to expend the great amount of energy necessary to its cul-

tivation one could see productive fields of grain and forage. The hillsides which could no longer be utilized for cultivation were used for hay production and pasture. The farm buildings are very neat and typical of the architecture of Switzerland with their extended roofs and wooden beams between the walls of stucco. It was here that we first saw buildings constructed entirely of wood. The hay which we saw being gathered was gathered mostly by hand. A good deal of it was packed into large bundles of canvas, then packed upon wagons and carted away to the barns, cows being used as the motive power. Here, too, more

On Lake Brinz, Switzerland.

women than men were seen working in the fields. A peculiar thing about a Swiss farm is that there are almost no fences or pastures. Riding through the valleys one sees no cattle except those hitched to wagons. They are all kept in barns or else on the pastures high up in the mountains even in the summer time. But although nearly half of the Swiss people are farmers, Switzerland's greatest asset is undoubtedly her wonderful mountains, beautiful lakes and hotel accommodations for the myriads of tourists she entertains each year.

Around Neuchatel the country is given almost entirely to the cultivation of grapes, one of the noted Swiss wines being pro-

duced in this part of the country. The vineyards appeared to be in the height of cultivation, and we arrived during their most productive period.

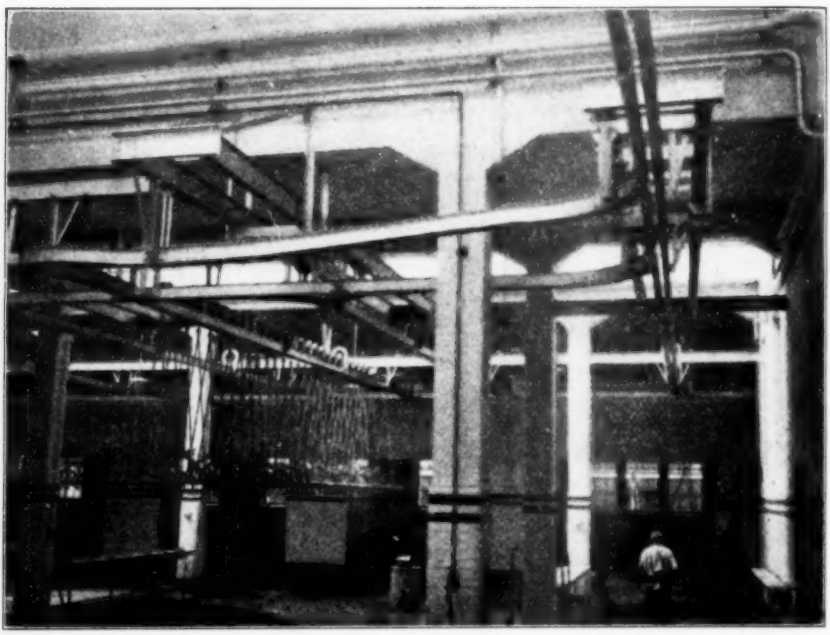
The roads throughout Switzerland appeared to be in splendid condition, and it must be joyful to the automobile tourists to have the advantage of such good, smooth roads in touring this beautiful country.

On our arrival at Berne we were met by the Secretary of the American Legation and several other Americans. The program for our entertainment in Berne had been arranged by these gentlemen, to whom we owe a great deal of gratitude for their very kind consideration. The Palace Hotel in which our party lodged during our sojourn in Berne, deserves special mention, since it proved the finest and most enjoyable one at which our party stopped during our whole trip. From the rooms of the hotel the scenery is most beautiful. Mountains rise almost perpendicularly in the rear, and at the foot of these flows the swift cataracts of the river Arr, while at the front of the hotel the beautiful city of Berne may be overlooked.

Berne, the capital of Switzerland, is known as the city of bears. Everywhere may be seen figures of bears carved in wood or stone, and down near the river are the bear pits where a number of live bears are kept for the amusement of the people. The river Arr flows through a deep canyon crossed by a bridge on the street level hundreds of feet above water. Adjoining the city is a mountain about 2,500 feet high which is ascended by a cable railway. From the summit of this mountain a beautiful view of the city, the valley of the Arr and the Berner Alps may be seen, the highest of the peaks being the Jungfrau, which is about 12,600 feet high. In Berne a good many dogs may be seen hauling milk carts for the delivery of milk in the city. Two or more dogs are harnessed to a two-wheeled push cart holding three or four cans of milk, and a boy or woman walks behind holding the cart handle and helping the dogs on the steep ascents. Long handled dippers are used for dipping out the milk and filling the customer's pails. In Switzerland, like in all countries of conti-

nental Europe, the milk is used hot, which, it is presumed, is a safeguard against disease, since the regulations governing the milk supply are not of a standard one would expect to properly protect it against contamination.

Professionally we were offered splendid opportunities for comparative study in Berne. A municipal abattoir established



Berne, Switzerland, Municipal Abattoir Killing Hall for Small Animals.

and placed in operation only a few months prior to our visit proved of great interest. For its size, it is one of the finest in the world. It is entirely built of stone and cement, and every detail has been considered in planning and constructing it. It cost the city about $700,000. Most of the meat consumed in Berne is slaughtered in this abattoir. No provision is made, however, for the inspection of meat which is brought in to the city from the outside. The inspection proper is conducted by veterinarians and is carried out in accordance with the rules and regulations governing the meat inspection of that city. These are very much similar to those of other European countries.

In the abattoir separate buildings are maintained for the slaughter of cattle, hogs, sheep and calves. An additional separate building is also used for the slaughter of horses, of which about seven hundred are killed for food purposes each year. A sanitary abattoir is also provided in which all of the condemned meat is disposed of. Also, the animals which are suspected of being diseased are slaughtered and disposed of in accordance with the findings. The various slaughtering halls are connected with a refrigerating room which has a capacity sufficient to hold all animals. At the present time this advantage is not being utilized

Hall to Coolers at Abattoir of Berne, Switzerland.

very extensively, since the butchers have not yet become accustomed to storing their meat.

The establishment charges $1.60 per head for killing and dressing cattle and 65 cents per head for hogs. The owner is entitled to all of the offal he wants, including the blood, but the blood is seldom saved. The cold storage facilities are rented

to the butchers at $10 per cubic yard per year. The railroad cars which are being used for the transportation of live stock are disinfected at the yards with live steam. Veal calves are handled very much the same as in Paris, and a very good grade is being killed. Most of the cattle slaughtered are of the Simenthal breed. They are good-sized and in good condition. About 60 per cent. are tuberculous. Tuberculin tests are made only in rare cases. Most of the dairy cattle are insured. A physically affected case may be destroyed and is paid for by the insurance company. The Government pays no indemnity, and neither the Government nor the municipalities pay any attention whether the milk supply is received from cows free of tuberculosis or not. This probably explains the fact that raw milk is hardly ever used.

According to information we received in Berne, there is very little rabies and practically no glanders in Switzerland. There are plenty of watering troughs in the city of Berne, but provision is also made for the drawing of water in buckets.

Biological products for the treatment of man and domestic animals are prepared in the Institute for Hygiene and Bacteriology, of which Professor Kolle, the noted bacteriologist, is the director. This Institute is used not only for the production of these products, but also for research work and for the teaching of hygiene and bacteriology to the students studying medicine. It is further used for the protective treatment of man against rabies, according to Pasteur's method. The Institute is one of the best of its kind in Europe, and its equipment is up-to-date.

Professor Kolle gave our party an address on the working of the institution, in the course of which he also showed us splendid pictures with the aid of a projectroscope, demonstrating the technique in the preparation of the various biological products. The following products are being prepared at the Institute: Antitoxins for diphtheria, tetanus, infectious cerebro-spinal meningitis and for streptococcic infections, as also sera for diagnostic purposes, typhoid fever, bubonic plague and Asiatic cholera. Further, a vaccine for bubonic plague and cholera is also produced. The sale of these products is not limited to

Switzerland, a great amount of it being exported to various other countries.

The laboratories are located on several floors of the main building, with ample facilities and equipment. An interesting feature noted in the laboratories was the sterilization of water by the aid of ultraviolet rays. According to Professor Kolle this method works splendidly and is very simple. Very good horses are used for the production of the serum. Animals are tested by the mallein test prior to the treatment. Before bleeding the horses for the serum production they are starved for twenty-four hours, as it has been found that only by such procedure is it possible to eliminate absolutely B. coli from the circulation. The location of the buildings comprising this Institute is ideal, very nice parking and landscape gardening being utilized for the beautifying of the premises which materially adds to the splendid impression one gets from a visit to Professor Kolle's Institute.

## Switzerland.

Switzerland has two veterinary colleges. One is located in Zurich, the other in Berne. The Veterinary College at Berne is incorporated with the University, and the faculty elects their dean annually.

During our visit to the Veterinary College at Berne we had the pleasure of having the genial Professor Hess guide us through the different departments of the college. Like in most of the European veterinary schools, the institute at Berne has separate buildings for the different departments. The equipment, as well as the condition of the buildings, particularly so the hospital, proved somewhat a disappointment to us. The facilities offered to the students do not come up to the veterinary schools of other countries we visited, although without a doubt the teaching staff compares favorably with those of any other like institution.

Great stress is laid upon the education of the students in bovine diseases and Professor Hess, who is an international authority on bovine practice, devotes his efforts to the development

of this branch. This phase of the science is a very essential feature in the practice of the veterinarians in Switzerland, since most of them are dependent upon this kind of practice, it constituting the greatest part of their work. This is principally due to Switzerland's extensive dairying industry and the large extent to which the bovine species is used as motive power in the work

Veterinary School at Berne, Switzerland.

on the farms. It isn't at all uncommon to see teams of cows pulling the hay wagons and also plows in the rural sections of Switzerland. The cow thus serves not only a dual, but a triple purpose in Switzerland. Primarily, she is a milk producer, secondarily, a source of motive power in working the farm, and after her usefulness in these lines has declined she is fattened for the butcher.

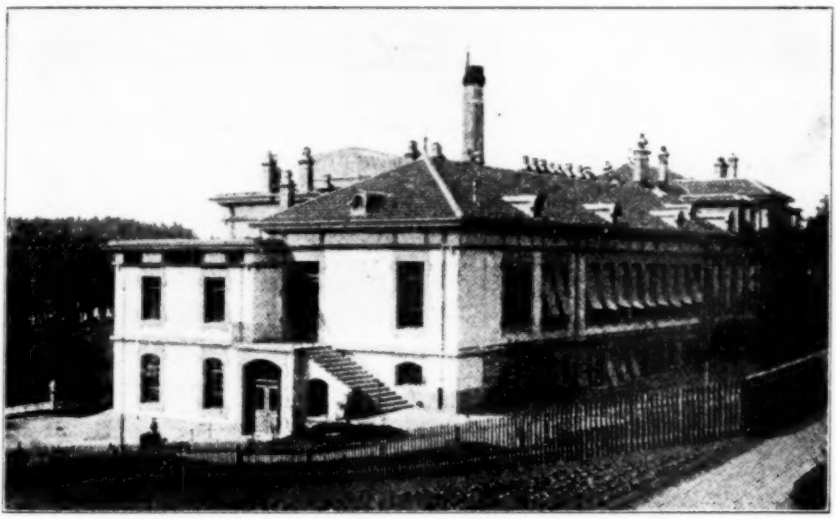
Students of the Veterinary College in Berne pay what appeared to us excessive tuition. For each hour a student is charged five francs, of which sixty per cent. goes to the professor. The

course extends over a period of four years, and includes all the subjects of veterinary medicine.

Professor Hess's ambulatory clinic is one of the most attractive features of the school.

There is also a good horse shoeing course given, for which a suitable establishment is provided. Those who desire to take up horse shoeing as a vocation are required to take a course in one of the veterinary colleges and unless they obtain a certificate from the institution they are not permited to shoe horses in any part of the country of Switzerland.

The laboratories were of the ordinary type, and special rooms were provided for the assistants of the professor in charge of special research work, where diagnoses of specimens sent from different parts of the country are made. One interesting feature



Main Building, Serum Institute, Berne, Switzerland.

was noted in the method of sending in specimens of suspected cases of anthrax to the laboratory for diagnosis. A potato is cut in two parts, the center dug out, and the specimen placed into the cavity; after which the parts are again put together, wrapped with paper, tied, and mailed to the laboratory.

Vaccination for the prevention of blackleg is very extensively practiced. The Government pays sixty per cent. of the value of vaccinated animals if they die as a result of the vaccination, or subsequent to vaccination against blackleg.

A large number of ovaries were shown to us by Professor Hess which were taken from animals which died of anthrax. They showed extensive hemorrhagic infiltration with edema.

Stables of the Serum Institute of Berne, Switzerland.

From the observation of Professor Hess, these lesions appear to be invariably found in anthrax.

His collection of milk samples is also of the greatest interest, and milk hygiene naturally constitutes one of the most important subjects at the Berne Veterinary College. The samples are collected from various pathological conditions of the udder, and it is claimed that from the characteristic changes in the milk which accompanies the different inflammatory changes of the udder it is possible to assume the character of the disease. The samples are preserved, and are used in connection with the teaching of the subject of milk hygiene.

In the anatomical room we were shown anatomical specimens that had been in use for twenty years in connection with the teaching. They still appeared fresh and in good condition. They were preserved by placing the fresh specimens in 60 per cent. alcohol for several weeks, then in glycerine for eight or ten days, and finally treating them with oil of cloves both inside and out-

side. Stomachs, intestines, bladders, etc., were preserved in this manner, and by blowing them up they offered splendid specimens for demonstrating purposes. A small museum is also maintained in the college and the collection of diseased udders with the most varied kinds of pathological changes is of the greatest interest.

During our stay in Berne a national exposition of Switzerland was in progress, and of course was one of the greatest attractions for our party. Professor Hess kindly invited us for an afternoon visit to the grounds. This proved to be a special treat, since it gave us an opportunity to study everything pertaining to Swiss progress, culture, science, industry, etc., within the few hours which we had at our command. It is natural that during a national exposition the government aims to collect the best in each particular line for the instruction and education of visitors, and this proved to be the case at the exposition of Berne. Unfortunately our time was rather limited, and we could not devote to each phase the necessary attention; but the agricultural exhibit, and particularly everything in the veterinary line offered us splendid opportunity to familiarize ourselves with the progress made in these lines. In the agricultural building a special room was provided for the veterinary exhibit, and through this exhibit it was aimed to educate the farmers and stock keepers in the various diseases, in the control of the infectious diseases, their extent throughout Switzerland, etc. Charts on tuberculosis and blackleg were very instructive, and the physiological and anatomical exhibit was also quite complete. Here again we noted the specialization on the organs of milk production.

Like in all such exhibitions, buildings were provided for the exhibition of industries, art, education and all other branches of the national development of Switzerland. The dairying exhibit occupied a special building and the manufacture of the noted Swiss cheese was represented in all its minute phases. Our visit to the exposition was one of the most pleasing and instructive features of our tour, since hardly any of us expected to see such a marked development in all lines in the little country of Switzerland.

The American tourists visit Switzerland particularly for its wonderful scenery and do not include in their itinerary a study of any of the other phases pertaining to the life of the inhabitants of the country. The Swiss are the best hotel keepers in the world. They have special schools for teaching the hotel business, and it is true that nearly a tenth of the population does nothing but see that the tourists have good things to eat and comfortable accommodations at the hotels. This, of course, is very essential, since if Switzerland did not provide for this she would fail to secure the usual good influx of tourists. The attention and courteous treatment one gets in the Swiss hotels is generally known. Our party was also well impressed with the high development of everything for the accommodation of visitors.

## INTERLAKEN.

From Berne our tour lead us to Interlaken, one of the prettiest resorts in Switzerland. This trip was partly made by rail and partly by boat. After leaving the train at Thum we boarded a comfortable steamer, which immediately ushered us into the most beautiful scenery. The snow-peaked mountains in the distance, and the beautiful green hills on the shores of the lake, studded with magnificent villas everywhere only substantiated the well-founded claim of the natural beauties of this country. The landing places with the numerous small resorts, on the shores of this lake, certifies to the ingenuity of the Swiss people in utilizing every spot which could lure a tourist for a rest, even if only for a few hours. Hotels, restaurants and resting places are provided everywhere for the comfort of the tourist.

Interlaken itself consists principally of hotels and shops. It is located between the Thuner Lake and the Lake of Berz, with the view of the Jungfrau and the group of other Bernard Alps, with their cog-wheel roads in different directions, afford the tourist splendid excursions. One of the finest of these is a trip to the Eiger Glazier and the Jung Frau. Through winding roads which lead along the swift mountain river the cog-wheel road took our party through small resorts to Scheideg. From here we

indulged in a bit of mountain climbing, partly through snow, and it was a rare treat to our party to engage in a snow-ball contest on the third of July. After several climbings we were glad to rest our untrained and tired legs in a restaurant near the Eiger Glacier. A walk over the Glacier was also a unique experience to us, and, of course, we had to take snap shots of groups of our party as we stood on the ice of the noted glacier.

Several other side trips were also made by our party to the most noted beauty spots of nature in this region. With special coaches for such excursions, drawn by four good horses, the party took a trip to one of the most noted water falls in Switzerland. On leaving the hotel the old snow-capped mountain appeared to be within walking distance only three or four miles away. We drove towards them for two and one-half hours, and they still appeared at about the same distance from us. The drive was up a valley following the river mentioned above. The land is cultivated on the flats, and every available piece of ground appears to be utilized. There are green fields and buildings well up the side of the mountains on either side of the drive, so far up and so steep that it doesn't seem possible that the owner could get to or from his property. The buildings are small, one-story combination dwelling houses and stables. They look as though they might be warm in winter, and the winters must be very severe. There is snow the year around not far above where the people live.

Continuing our journey the valley narrowed and the walls on either side appeared perpendicular for about one thousand feet or more. In one place a stream of water shoots over the top of such a wall. It is a respectable looking stream when it begins its flight of one thousand feet, but it is soon lost in a mist, and by the time it gets to the bottom it looks like fog. Further along our drive we found a place where the river appeared to come out from a hole in the mountain. We took an elevator that lifted us several hundred feet and back into a hole where the water comes out of the rocks with a terrific force. It appears to be a sewer for the snow fields above. The cave is lighted by electricity

in various colors, which gives a beautiful but weird appearance to the boiling, tumbling water.

The visitors of Interlaken are accustomed to spend their evening at the Kursaal, which affords recreation to them. Such an institution is established in almost every resort of Europe. The Kursaal of Interlaken is situated in a beautiful park, and provides various kinds of amusements. The walks in the park afford a pleasant form of recreation, and during the day concerts are given by a splendid orchestra of at least sixty pieces, and noted singers are also engaged. The visitors sit around tables, and when tired there are various rooms with all sorts of gambling paraphernalia which will afford a change if you feel overburdened with money and wish to be relieved.

Gambling at tables, particularly the roulette, appears to be the favorite game. At the entrance a foreign cashier is ready to change any coin into French or Swiss money, so that you should not have an excuse for missing this form of amusement. Croupiers around the table sound their voices in announcing the play, and the excitement is kept at constant pitch. The game continues in several of the rooms and the appointments are sufficiently elaborate to meet the most critical visitor's desires in this direction.

## LUCERNE.

Again by boat we continued our tour in Switzerland to Lucerne. This resort is more on the type of a city, and was our resting place during the Fourth of July. The American colony provided for the celebration of this patriotic day, among other things arranging for the "Elite" ball on the evening of the Fourth, but I must say, with the greatest regret, that the American democracy was not included in the arrangements of this affair. The hotel management in charge of the hotel where the ball was to be held informed us that evening dress was required for those who desired to attend. Surely it cannot be expected of every American traveling tourist of Europe to carry his evening suit with him, and it appeared that such discrimination was uncalled for.

During our stay in Lucerne we had the privilege of witnessing a wonderful exhibition of aeroplane flying, and the noted French aviators rivaled with each other in performing the loop-the-loop and other difficult stunts in the air, thrilling the onlookers to the utmost with their daring.

Visitors cannot afford to miss a visit to the famous Lion of Lucerne, carved into the side of a solid rock, about sixty feet high. The monument is to commemorate the siege of Versailles, where about one thousand members of the Swiss Guard were killed in defending the king's palace on the 10th of August, 1792. The Austro-Prussian army stormed the Tuilleries, and two battalions of the Swiss Guard were destroyed in defending the palace. A stone's throw from this monument is located the panorama which shows the French and German armies passing through Swiss territory into France. The French soldiers surrendered their equipment to the Swiss. This was during the Franco-Prussian war of 1871. The panorama shows thousands of soldiers and horses marching, the wounded being loaded on a train to be sent to Neuchatel.

Lucerne, like other Swiss resorts, has a Kursaal, but this one also contains a theater in addition to the play rooms.

Our stay in Switzerland afforded us most pleasant recreation. The effect of the scenery on our minds was very beneficial, especially to those who became somewhat tired of the continuous visiting of scientific institutions, and the sound of the English language at every place in Switzerland could not fail to cheer up those who had begun to feel the first strains of homesickness vibrating in their heart.

All places in Switzerland are very cosmopolitan. Representatives of all nations are conglomerated and during a walk almost every language can be heard spoken.

## Italy.

From Lucerne our trip took us to Italy, via the St. Godard Pass. The scenery continues beautiful in a valley which narrows and widens as the train rushes through tunnel after tunnel. To

reach the height of the Pass it winds through the tunnels and outside of the mountains in such a way that at times the same place may be seen on five or six different occasions from various elevations. As the long St. Godard Tunnel is passed, the Swiss scenery, with its characteristic buildings, gives place to the Italian style of architecture of brick and stone construction. Soon after the tunnel is left behind one hears almost entirely the Italian language spoken, the change being also noted in the national dress of the people. Upon arriving at the Italian border the usual custom inspection is undertaken, which, like on the borders of other countries, is not very strict. The trip through northern Italy afforded us a beautiful view of the Italian lakes and some of the most cozy spots of Italy Lake Como particularly, leaves an impression of delight upon one's mind. The beautiful villas upon its shores, the winding contours of the lake, and the natural beauties of the mountains in the background are very magnificent.

We soon arrived in the Po Valley, with its fertile farms and vineyards, and an entirely different scenery presented itself. Highly cultivated fields, with the harvest well in progress, vineyards and fruit trees loaded to their utmost capacity with the most varied kinds of fruit appeared before our eyes as the train pressed towards Milan.

## Milan.

The city of Milan is very interesting to the tourist, possessing, as it does, many interesting creations of the Roman Empire, as well as modern quarters of an up-to-date city.

After the long journey from Lucerne to Milan our party was glad to take a short rest at the hotel, and Professor Lancelotti, the Director of the Veterinary School of Milan, paid his respects and informed us of the program he had arranged for our stay in that city. The program was rather crowded and a great deal of work was ahead of us for our short stay there.

In the morning we indulged in a carriage ride through the city and visited the famous Cathedral of Milan, the old Castle of Milan, Napoleon's Gate, or Arch of Peace, the Monumental

Cemetery and the oldest church of the world, in which the original of the most noted painting of Leonardo de Vinci, " The Last Supper," is painted upon the wall in the dining room of the monastery.

The aid of a guide during the ride proved very advantageous, as through him we were able to get full information in regard

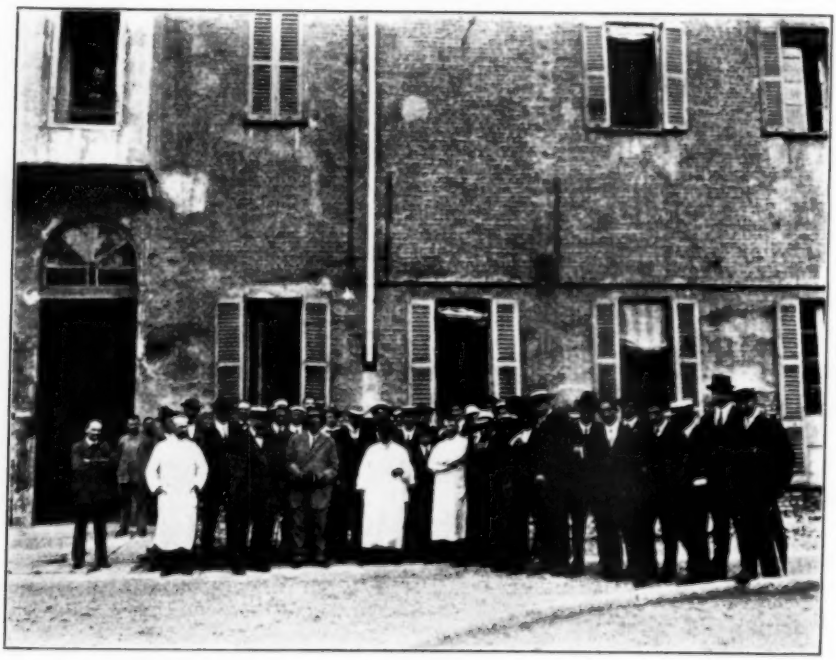
Cathedral, Milan, Italy.

to everything of interest connected with the noteworthy places to which he took us.

The Monumental Cemetery is probably one of the most interesting places to visit in Milan. The most magnificent monuments in the world may be seen here. Every one represents a work of art, and we were told that the cost of a monument in one particular part of the cemetery must not be less than a fixed sum. Among others, one particular structure, which represented a plowing scene in which a man behind the plow guided a team of oxen, was especially fine. This monument was erected by the

widow of a very wealthy man who obtained his start in agricultural pursuits.

The afternoon was devoted to a visit to the Veterinary School of Milan. This school is a part of the University. Candidates for admission are required to have a high school education, two years college, and then spend four years in the Veterinary School. The college year is ten months. The school was established at the present location in 1804. The buildings are large, and special buildings are provided for the different departments.



Faculty of the Veterinary School of Milan, Italy, and Members of the A. V. M. A. European Party. Prof. Lanzilotti in Center.

Italy has seven national veterinary schools in addition to this private veterinary institution, and in view of the size of the country, it is hardly necessary for such a number to provide the country with veterinarians. And, as a matter of fact, none of the schools receives a sufficient quota of students, and another

result of this large number is that their appropriations are insufficient to keep up with the equipment and reconstructions required of a first-class veterinary college. The school at Milan is one of the best in Italy.

Upon our arrival at the school we were met by the son of Director Lancelotti, who is also Professor of Surgery. The genial son of the Director spoke sufficient English and German to interpret for our party, while Professor Lancelotti was very fluent in French, giving me an opportunity to obtain the information we desired from him personally.

After a very courteous reception in the offices of the Director we proceeded with our visit to the different departments of the institution. The professors in charge of the departments were always ready to furnish us with all the information we sought. Like other veterinary schools, the one at Milan has also a splendid library of about 10,000 volumes, as well as subscriptions to the various veterinary periodicals.

Knowing that the members of our party who are engaged in actual practice would enjoy seeing the work of so noted a surgeon as Professor Lancelotti, I had requested him to favor us with an exhibition of his work, to which he complied by providing two subjects for operations. These were two horses, on one of which he operated for an affection of a cold abscess, and on the other for fistulous withers. His work was splendid, and it was a real pleasure to every one of us to see the old gentleman (he is about 65 years old) handling so skillfully the knives and other instruments. Chloral hydrate is used almost exclusively as an anesthetic, and of this, 40 grs. in 1 liter of water is injected intravenously. For the disinfection of the skin denatured alcohol is used. The instruments are kept in 2 per cent. carbolic and 2 per cent. caustic potash solution.

The arrangement of the surgeons' ward is one of the finest in the veterinary schools of Europe. The animals are cast on a leather mattress in an anteroom which rests on a table on a level with the floor. With hydraulic pressure the table is lifted from a pit in the ground and is so arranged that it can be rolled upon

wheels on a track of rails into the operating room. This is an amphitheatre with a gallery around the room. Everything is finished in white enamel. From the gallery it is possible to look down upon the operator and watch every step of his work—which, of course, offers the student the best kind of opportunity for studying the operations.

From the operating room Professor Lancelotti took our party to the lecture room on surgery, which is equipped for kinematographic work. Here we had the great pleasure of seeing the pictures of various kinds of operations on the screen and it seemed to every one of us that the teaching of surgery with moving pictures is of the greatest advantage to a student. The reels may be repeated as often as desired, thus affording the student every opportunity to familiarize himself with the various steps in the surgery of the operations. It certainly would be of great advantage to inaugurate this method in the schools of our country, and I am sure that once attempted it would become very popular at every institution.

The laboratories of the Veterinary College at Milan are well equipped for the study of veterinary science and also for research work. Foot-and-mouth disease was under investigation during our visit, and it was very pleasing to us that in spite of the request of the Director to the man in charge of the work to show us some of his cases, he refused to grant us this privilege.

After the very instructive tour of the Veterinary College we were treated to a splendid buffet luncheon, on which occasion, of course, the customary champagne was not missing. Speechmaking was indulged in, Professor Lancelotti greeting our party. A very interesting incident in this connection occurred on this occasion, four languages being used in the address of welcome. Professor Lancelotti welcomed us in French, which I interpreted to the members of our party in English. I responded in German, which in turn was interpreted to the members of the faculty by the son of the Director into Italian. Each member of our party parted from Director Lancelotti with the highest regard and most sincere gratitude toward this splendid old gentleman.

### *The Sero-Therapeutic Institute of Milan.*

One of the largest and probably most important serum institutes of Italy and the southern part of Europe is located at Milan, and is known as the Sero-Therapeutic Institute of Milan. While this institute is a commercial plant, to some extent it is subsidized by the Italian Government and it furnishes practically all biological products for the use of the government and also for the Italian colonies. Their products have also gained favor in all

Main Building of Sero-Therapeutic Institute, Milan, Italy.

parts of Europe, South America and other parts of the world. Commercialization in this institute is not very apparent. The equipment for research work and the noted scientists connected with this institute is indicative of the high character of its scientific pursuit.

Professor Serafino Belfanti, the Director of the institute is assisted by a splendid corps of scientists. Among these I especially desire to mention the noted Professor Ascoli, who is known throughout the world, particularly among veterinarians, through

his numerous publications and notable work on anthrax. The Ascoli method for the diagnosis of anthrax is at the present time accepted almost universally and it constitutes without doubt the best method of procedure, especially so in cases where the animal has been dead for several days. This method employs a precipitation test in which an immune serum is used against the material to be examined.

Professor Ascoli has also done some very important work in the study of contagious abortion of cattle. He showed us twenty-five different strains of B. abortus which he had isolated by means of guinea-pig inoculations. Considerable work was carried out in the institute relative to the treatment of this disease with biological preparations, and for this purpose both specific anti-serum as well as its vaccine has been used. Thus far, neither has proved entirely satisfactory. He suggested that a combination of the two might give good results. The use of anti-serum for the treatment of infectious diseases is by far more extensively used in Europe than is the case in this country. We learned that the institute prepares blackleg, anthrax and other sera for diseases caused by specific microorganisms. It is aimed to control the diseases with anti-sera together with vaccines. By such use the danger of death from the treatment is almost entirely eliminated, and at the same time a more lasting immunity is conferred upon the patient. They found it advisable to immunize horses rather than cattle for the production of anti-sera to use in the treatment of cattle.

The Institute prepares all the different kinds of biological products, and also various kinds of organo-therapeutical agents. They recommend the use of serum for acute gonorrhea, while in chronic cases the use of vaccine is advised. The views of Professors Belfanti and Ascoli relative to the value of the use of biological products for the treatment of diseases, particularly so with reference to the use of bacterins, were considered very interesting to the members of our party. A conservative use of these products in Europe is a striking contrast to the indiscriminate employment by the veterinarians of this country.

Of course, hog cholera serum is also being used now to a considerable extent throughout Italy, although this product is not being prepared in that country. It is imported from Germany, but the Serum Institute was delighted to be in a position to take advantage of the presence of Mr. Harry C. Moore, a member of our party, who, after showing Professor Belfanti illustrations of the "Moreland Biological Farm," in Indianapolis, and speaking of

Abattoir, Milan, Italy.

their method of preparing hog cholera serum, was able to make arrangements for the importation of American hog cholera serum into Italy.

A visit to the Municipal Abattoir of Milan was also of considerable interest, although this establishment was far from being up-to-date in construction, equipment, method of killing and sanitation. Here, just as in the La Villette of Paris, the cell system of killing is still in vogue, which, of course, has its disadvantages. It is entirely managed by the municipality, and the cus-

tomary fees for the privilege of killing are collected by the city, from which the expenses for running the establishment are defrayed. It is contemplated by the city to erect a new modern establishment in the very near future, according to the latest models for such plants. It is to cost about $4,000,000. No cold storage is provided. In the abattoir about 5,000 head of cattle, 50 hogs, 90 calves, 30,000 sheep, 10,000 horses and mules are being slaughtered annually. The cost of food-producing animals is relatively about the same as in the other countries of Europe

Municipal Abattoir at Milan, Italy, Showing "Cell System" for Killing.

and only slightly higher than in the States. Horses bring usually about four cents a pound, live weight. The inspection is very rigid, particularly with reference to glanders. But very few cases are met with in the abattoir, since most of the dealers recognize the disease, and if it is suspected the horse is not sold for food purposes.

About 60 per cent. of the cattle slaughtered are tuberculous. The skin of the animals is frequently left on the carcase for eight days, especially in the winter time. It is claimed that the ripen-

ing of the meat under such conditions progresses more favorably. No Freibank is conducted. Animals which on post-mortem examination are conditionally passed for food are sterilized in the usual method and then released to the butcher. The method of inspection is conducted by the city veterinarians and is apparently thorough. The regulations, however, are not as rigid as those of the United States, particularly so with regard to the disposition of the animals affected with tuberculosis. During our visit in Milan we observed tubercular carcases released to the butcher after sterilization that would have been condemned for offal in the States.

The Veterinary Police Measures in Italy are very strict, particularly so during outbreaks of diseases. In Milan all dogs are required to wear muzzles, and every dog we saw in that city was properly muzzled, even those lead on leashes. A fine of from thirty to fifty lira is imposed on violators.

Foot-and-mouth disease is very common in Italy. During our visit to the abattoirs we saw several head of cattle salivating but did not examine their mouths. Everything which is sent to these yards is slaughtered. The Government pays no attention to tuberculosis, and there are no compulsory measures adopted to its control. The cattle which were offered for slaughter appeared to be in prime condition, the calves of good size and fat. Two breeds of cattle predominated. Most of them were the large white or cream Lombardy breed. The others were Swiss.

The inspection is divided into two parts, one the inspection proper, the other the administration. Both are under the supervision of a qualified veterinarian. There are eleven veterinarians employed as inspectors, and three others who attend to the administration.

During our stay in Milan we had the pleasure of the company of the United States Vice-Consul, Mr. Funk, who was very kind to point out to us many features of interest in that city, and the evenings were spent in visiting some of the very interesting cafes and other places of gayety, which are quite numerous for the size of the city.

A description of the monumental structures of Milan, particularly so the Cathedral of Milan—which, no doubt, is the finest of its kind in the world—is not deemed advisable, since all travel books of Europe contain splendid accounts and descriptions of this and other wonderful structures.

## Venice.

The railroad trip from Milan to Venice is through a level country, most of which is devoted to agriculture. We saw the harvesting of hay, oats and wheat, all by hand. Only one mowing machine was seen. All the rest was cut by scythes. In some places they were threshing, and threshing outfits looked very small when compared with those used in this country. Ox teams were used everywhere, and in many instances two pair of oxen to a plow. Hardly any horses were seen working on the farm.

Bridge of Sighs, Venice.

An interesting incident occurred during the trip from Milan to Venice in one of the compartments in which members of our party indulged in a social card game. The conductor of the train stopped the players, stating that card playing is strictly prohibited on railroads of Italy. This measure is taken apparently to guard passengers against card sharks.

The approach to Venice is through meadows which very much resemble those seen as one approaches Atlantic City. Venice is built on 117 small islands. There are no horses or street cars in the city. All streets are water, and the only conveyances gondolas. We were even met upon our arrival at the station by gondolas reserved for our party by the hotel man-

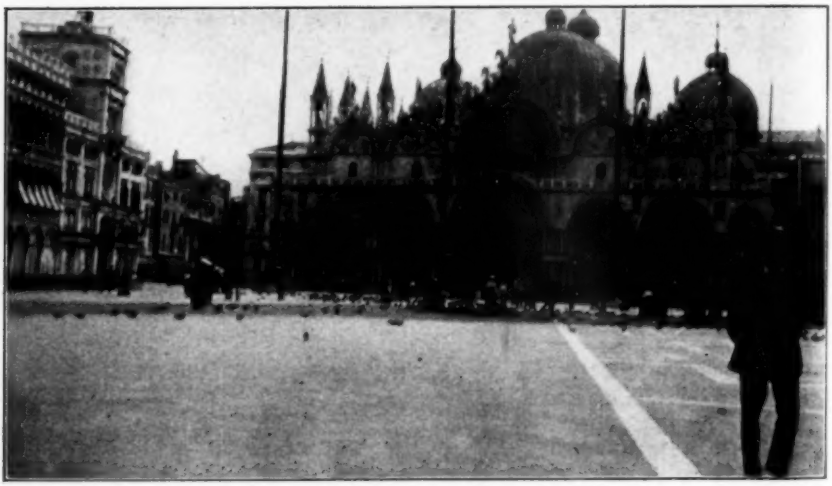
Grand Canal, Venice.

agement which brought us to the landing place right at our hotel.

From a veterinary standpoint Venice does not offer many points of interest. Outside of a visit to the municipal abattoir the party devoted all their attention to the sight-seeing and other pleasures offered by this very interesting city.

Here again a detailed description of the city would be a useless task. There are very comprehensive descriptions in many publications. Nevertheless, a few brief incidents of our visit will possibly prove of interest.

In order to avoid the use of gondolas through circuitous crowds, of back alleys, bridges, etc., we reached on foot the St. Mark's Place. This is about half the size of a city block. It is surrounded on three sides by two-story buildings, and on the fourth is located the St. Mark's Cathedral and the Duke's Palace. The Cathedral, which was built about one thousand years ago, is wonderful from an architectural standpoint, and the rich mosaic in the interior, from the point of art, is probably the greatest of its kind. The mosaic work especially is called to the attention of the visitors as the wonderful feature of decorative art. The St. Mark's Place is also noted for the immense number of pigeons which started to breed here about the time the plaza was built and have continued ever since. At one time their food was provided for by the city. Now they are fed by travelers. Venders offer small sacks of cracked corn to the visitors for the purpose of feeding them to the pigeons, which are very tame and which, on



St. Mark's Cathedral, Venice.

offering the corn from the hand alight in the palm to pick the corn.

In the Cathedral the bones of St. Mark are being preserved. They were brought to this Cathedral from Alexander in 829. Over the entrance to the church are four bronze horses which at

one time were taken by Napoleon I. to Paris in about 1800. They were later returned to their original places. The models of these horses are considered especially fine. The altar of the church is also very beautiful, and particularly so the four pillars of alabaster, which are said to have been brought to this church from King Solomon's Temple.

Mr. and Mrs. Moore Feeding Pigeons at St. Mark's Place, Venice.

To the right of St. Mark's Cathedral is the Duke's Palace, which, during the glorious reign of Venice as the mistress of the seas, played such an important part in the making of the history of the world. At the present time it still contains all the original rooms used for the administration and government of that great city, besides a collection of wonderful master pieces of paintings, historic, religious and other subjects. The Duke's Palace is connected with the prison by the noted Bridge of Sighs, which is one of the attractions to the visitors of Venice. The cells in which the prisoners were kept cannot fail to impress the visitor with the horrors of those ages.

There are numerous beautiful churches in Venice. The architecture of the buildings, the grandeur of the city with its winding canals exert a remarkable impression upon the visitor, particularly so in the twilight and in the evening while seated comfortably in a gondola as it glides quietly through the water brings back to the mind the many incidents of the ancient grandeur of this wonderful city. Considering the popularity of hiring the gondolas by the members of our party, it seems that the romantic feelings have not entirely been displaced by the realistic. Besides, Venice is the mecca of the honeymooners, and one meets them at all places enjoying the pleasures of this grand old town.

In this age of materialism of course Venice could not escape the venders' luring displays and shops, which are very plentiful, particularly so around the St. Mark's Place, and their goods are certainly beautiful, inviting even those who have no desire to make any purchases to invest smaller or larger amounts in the purchase of various kinds of souvenirs, etc.

A very short distance from Venice is located Lido, one of the most favorite seashores of the Adriatic. The bathing beach of Lido is very popular and is always crowded with thousands of frolicking bathers. During our stay in Venice, as the weather was somewhat hot, we couldn't let the opportunity pass to take a plunge in the cool waters of the Adriatic, and two afternoons spent at Lido were certainly pleasing to our party. The novel experience gained on this occasion was the attire of the women in bathing. They wear tights, and while at first sight it appeared to us very immodest, soon our eyes became accustomed to it, though it did not take a close observer to notice at times the pleasing radiation from the eyes of some of our party towards a bather with the figure of the Venus of Milo. Of course we had to excuse their acquired habit in this respect, particularly so since the study of "exterior" was also included in the itinerary of our study tour!

Some of the members of our party also visited the city abattoir. A gondola was hired for this purpose, and after an hour's journey we arrived at the slaughter house. This is located near

the railroad station, and is about two miles from the main land. Unfortunately, no one was connected with the abattoir who could speak any other language than Italian, and it was difficult for us to make ourselves understood sufficiently to obtain all the desired information. We had the services of two veterinarians to take us around. Killing was not in progress during our visit, and all the different rooms connected with the establishment were closed for the day. The abattoir appears of modern construction, and is kept in a sanitary condition. The cattle killed are mostly of the Lombardy breed. Animals which are slaughtered are in good condition, and a special room is provided for the killing of horses. The veterinarians were very courteous and showed us the number of specimens which were collected during slaughter at the establishment. The collection also included many different instruments used for the killing of animals. In ordinary practice they use the same kind of a poll-ax (?) as is used in Paris and Berne for the stunning of animals. They strike the animal back of the poll into the medulla. The inspection is conducted in a similar way as practiced in Milan.

Our visit to Venice was very satisfactory to all of us, and we all felt again sufficiently rested to take up the more serious part of our journey and continue our trip into Hungary. We left Venice on a very comfortable boat for Fiume, Hungary. The boat was provided with very comfortable state rooms and a most enjoyable evening was spent aboard the ship. After the lights of Venice vanished from the horizon the strains of songs of a party of Hungarian students was especially enjoyable, their melancholic melodies being in perfect harmony with the effects which the city of Venice left upon our reluctant departure.

(*To be continued in the next issue.*)

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DRS. MELVIN AND MOHLER'S PAPER ON FOOT AND MOUTH DISEASE will be found on page 107 of this issue as part of the report of the United States Live Stock Sanitary Association meeting.

# SOME OBSERVATIONS ON HOG CHOLERA AND THE USE OF SERUM.

By H. Preston Hoskins, V.M.D., Assistant Professor of Veterinary Science, University of Minnesota, University Farm, St. Paul, Minn.

More has probably been written and said about hog cholera in the past few years than about any one other animal disease. On account of its widespread prevalence, its heavy annual toll of dead hogs, the consequent economic importance of the problem of its control, and the diversity of opinion as to the best methods of fighting the disease, all contribute their share toward keeping the question continually before the public.

It is pretty generally conceded that there is more cholera in the country at the present time than there was five years ago, before the advent of the serum-virus craze. It is also only too apparent to the most of us that we so far have not been controlling hog cholera, but only vaccinating hogs, and incidentally saving a farmer here and there the loss of his herd, or a part of it.

A more mistaken idea never possessed the mind of anyone than the idea that vaccinating a few hogs here and there would ever control the disease. But it is not the purpose of this paper to put forth any new theories as to how the disease may be ultimately gotten under control. Nor is it proposed to condemn the use of serum and virus, but rather to relate a few observations made in connection with serum and virus. In competent hands, and under proper control, anti-hog cholera serum, and possibly hog cholera virus, may be made valuable aids in dealing with the disease, but only by giving places of equal importance to education and sanitation.

When a veterinarian is called upon to vaccinate a herd, it will be either healthy or infected, and the method of treatment will depend, therefore, upon the condition in which the herd is found by the veterinarian. If the owner states that the herd is healthy, the veterinarian should verify this statement by making a careful

clinical examination of the hogs, and by guarded questions directed at the owner. There have been entirely too many instances of veterinarians treating healthy (?) herds, with a number of the hogs already under the sod, or lying in back of the barn covered up with manure. If the herd is sick, or thought to be infected with cholera, the first thing to do is to establish a diagnosis. There are times when this is difficult, and other times when it is practically impossible to make a positive diagnosis of cholera.

The symptoms and lesions which we are in the habit of associating with hog cholera are too well known to the practicing veterinarian to need repetition here, but at the same time, if we ask ourselves whether we are sure we know what are the lesions that are produced by the filterable virus, can we answer the question positively? Is it not possible that one or more of the lesions usually attributed to the filterable virus are in reality caused by secondary invaders, of which there are usually a number? Then the question may be raised as to why these lesions are so fairly constant, and is it likely that the filterable virus should always be associated with the same secondary infections? In answer to this question it may be stated that there are certain micro-organisms which normally infest the hog with quite a degree of regularity, and it may be that they become pathogenic in the presence of the filterable virus.

We can not entirely disregard certain of these micro-organisms without giving them a passing notice. Going back a few years, to the time when the *bacillus cholerae suis* was the accepted cause of hog cholera, it will be recalled that this organism, when injected into a susceptible animal, intravenously, in rather large doses, would produce certain lesions regarded as typical of hog cholera. Our attention has recently been called to the fact that the *necrophorus bacillus* may sometimes be responsible for some of the lesions which we have been in the habit of connecting with other micro-organisms and the filterable virus of hog cholera. According to Meyer,[1] other closely related bacteria undoubtedly play an important part in some of our swine diseases. A number

of these organisms have been recovered from the carcasses of hogs dead from what was anatomically diagnosed as hog cholera. Among them are the *bacillus typhosus suis,* the *bacillus paratyphosus suis* (Voldagsen), the *Bacillus coli* A. and B., the *bacillus enteriditis* (Gaertner), the *bacillus pyocyaneus* and the *bacillus suisepticus.*

Certainly here is a fertile field awaiting the veterinary pathologists and bacteriologists. We ought to know whether we have any other important swine infections beside the one due to the filterable virus of hog cholera. Is it necessary for the filterable virus to be present before these other micro-organisms become pathogenic? If a hog is rendered immune to the filterable virus, need there be any fear of the other micro-organisms mentioned? If so, which ones? We have heard of hogs, supposedly immune to hog cholera by reason of having been given the double treatment, dying of hog cholera several months later. Investigation showed that the hogs in question had not been immunized too young, and apparently there was no question as to the virulence of the virus. Either these hogs had failed to develop an immunity to the filterable virus, or they had died as the result of infection with some of the other closely related bacteria.

A situation that is sometimes met is the following: A herd of about one hundred hogs; one hog found dead; post-mortem examination shows lesions usually ascribed to hog cholera. Not another hog in the herd appears to be sick. Temperatures taken fail to show any rise above normal. Is it any wonder that the practicing veterinarian is sometimes puzzled and in a quandary as to just what to tell his client? Do we not have isolated cases, due to infection with the *bacillus cholerae suis,* without the filterable virus being present, in which event administration of serum without virus could not possibly be followed by permanent immunity, in its accepted sense? It sometimes happens that cholera will make its appearance in a herd, the hogs be treated with serum with apparently very good results, but some time later, much to the surprise of the owner and in no small degree to the veterinarian, the disease again makes its appearance.

One of the two explanations is usually given. Either the diagnosis in the first outbreak was incorrect, or the treated hogs failed to get sufficient exposure to the disease to become infected and thereby develop an active immunity. The latter explanation is the more probable, and veterinarians in many cases overcome the difficulty by administering virus to all hogs with a temperature under 104. Too much dependence should not be placed in the temperature. A high temperature, say 106 to 108, is usually indicative of infection, other symptoms being present, but the absence of a high temperature does not always indicate that the animal is not infected. A hog that came under the personal observation of the writer became infected, showed the typical symptoms of cholera and died, without showing a temperature above 104.2, the temperatures being taken daily.

The clinical appearance of the hog must always be taken into consideration. We have seen hogs, apparently perfectly healthy, but possibly exposed prior to treatment, given the serum-virus treatment with potent serum and then die with cholera. The usual explanation offered is that the disease was in the incubative stage and the virus injected only served to add fuel to the fire, even in the presence of the serum, the potency of which was attested by the good results obtained in a large percentage of the hogs treated. We sometimes hear the question asked that if a hog is infected with cholera, and already has a large amount of virus in its system, what harm will be done if a few drops more are injected? Possibly none, but the hog is dead, and if nothing but serum had been injected, no blame could be attached to the treatment.

Before going further, it might be well to define certain terms. When the "single" treatment is mentioned, we mean the administration of serum only or serum alone. The term "double" treatment is used to designate the administration of serum with virus, sometimes called the serum-virus, simultaneous, or serum-simultaneous method. Schoenleber,[2] of the Kansas Experiment Station, uses the term "double" to designate the combination method, which consists in the administration of the single (serum

only) treatment and ten days later the double (serum-virus) treatment. This combination method, or as we have termed it, the " follow-up " method, has been advocated as the safest way to immunize a herd. However, its practicability is to be doubted as a routine procedure.

Schoenleber[2] reports the results of treating 32 herds by the combination or follow-up method. In 14 diseased herds, 909 hogs were treated with 388 deaths (42.7%). In 18 healthy herds, 2870 hogs were treated with 24 deaths, a trifle less than 1 per cent. The method is hardly practical, except in a very valuable herd, and even then the chances for loss can be reduced to almost zero by giving a liberal dose of serum in employing the double treatment. If an animal is given a dose of serum and no virus, a passive immunity is conferred. This is gradually lost, and is completely gone in many cases at the expiration of 30 days, in less time in others. Therefore it is to be supposed that on the tenth day there is considerably less immunity than immediately after the serum was given. If the immunity is lost at a uniform rate, by the tenth day one-third to one-half will have been lost. Then why not give a good, big dose of serum in the first place, with the virus, and complete the process at one operation?

Veterinarians in sanitary control work differ widely as to the justification for the use of the double treatment, in the control of hog cholera. Men in one state will uphold the method and laud its virtues, while men in a neighboring state will condemn it outright, claiming that the double treatment is but a means of perpetuating cholera instead of controlling or eradicating it. The latter statement, however, can only hold good as an argument against the double treatment when it is misused or applied by incompetent persons. Cholera is with us, and apparently intends to stay for many years to come. We have the knowledge of how to prevent cholera in a single herd, or in a number of herds in a limited area, but we lack sufficient means or machinery to put this knowledge to good use on a large scale.

Dorset-Niles serum has time and again proved its ability to prevent cholera. We realize that it is one of the most valuable

agents for fighting a disease that was ever placed at the disposal of sanitarians. It is practical in its application, and efficient when carefully made, accurately tested, and then properly administered. Why has the double method fallen into disrepute with certain officials? Most probably because they personally have had poor success with it, or possibly because they personally have not taken the trouble to give it a fair trial, or to find out why bad results have followed its use in a number of instances. There are quite a variety of places where errors may creep in to cause poor results, unless every precaution is taken to avoid these errors.

An important factor in hog cholera work is the testing of the serum, especially if the serum is to be used in conjunction with virus, for the double treatment. Up to this time we are without means of testing or standardizing the serum, except by tests on hogs, which are rather expensive, time-consuming and only approximately accurate. We have no laboratory tests for potency such as are used in the preparation of other biological products. The virus of hog cholera, being non-pathogenic for other animals, does not allow us to make use of guinea-pigs, rabbits, or other common laboratory animals. The selection of suitable pigs for testing serum is rather an important matter, although experience has shown that if all possible care is exercised in the production of serum, it will not only test out all right, but will give satisfactory results in the field.

There are three cardinal requirements that should be kept in mind in the selection of test pigs. *First,* we should try to obtain pigs from non-immune sows. Pigs from immune sows inherit variable degrees of passive immunity. This may cause false results in a test, especially if young pigs are used. *Second,* we want pigs that have not been vaccinated by any method. Whereas the virus control pigs will serve as checks on the serum test pigs, the real embarrassment to the serum producer comes in the delay of retesting the serum. *Third,* we should be careful to use pigs that have not been exposed to infection. This is especially important from the standpoint of the virus control pigs used in the

test. The present official B. A. I. test could probably be improved by the addition of one or two pigs to serve as checks on extraneous infection, such pigs to receive neither virus nor serum, but to be placed in the same pen as the virus controls.

The selection of virus for use in testing serum is an important point. It should always be the custom for serum producers to use the most virulent virus obtainable in testing the serum. If a weak virus is used, the serum can very easily appear to have a greater potency than if a strong virus had been used. This brings up the question of a fixed virus of hog cholera. To the writer there appear to be too many difficulties standing in the way to make the proposition tenable. Reichel[3] has reported his observations on a fixed virus of hog cholera, using as a basis the fixed virus of rabies. The first difficulty met is the fact that rabies is not a common disease of the rabbit, whereas cholera is undoubtedly the most prevalent infection of the hog. It is a difficult problem to completely eliminate the possibility of natural infection previous to artificial inoculation. Then different hogs possess varying degrees of natural immunity to the hog cholera virus. This point will be referred to later in this paper. In the hogs reported on by Reichel, some were allowed to die, while a majority were killed, presumably moribund, to obtain their virulent blood. The question might be asked, "How much longer would these pigs have lived, and might some not have recovered?" Reichel says, "With the exception of virus number one, the strains show a gradual increase in virulence." As a matter of fact, however, a study of the table shows that the increase in virulence is quite irregular. For example, strain No. 13 kills in 19.2 days during one month, in 11.4 days during the next month, in 20.4 days the next month, then in 14.1 days the next month, and again becomes weaker, killing in 21.3 days the month following. It would appear that the behavior of this particular strain, with regard to its degree of virulence, depended almost entirely upon the susceptibility of the particular group of pigs inoculated during a given month.

Those of us who have had any experience at all with cholera

can not help but be impressed with the great variations in immunity exhibited by different hogs. During the year just passed (1914), we inoculated 1628 pigs, weighing from 50 to 100 pounds, with 2.0 cc. of virus, intramuscularly, for the propagation of virus to be used in the routine production of serum. Of these, 232 pigs, or 14.2%, never became sick enough to kill. Some showed no reaction whatever to the inoculation, not even a rise in temperature. Some showed a slight thermal reaction (1 to 2 degrees), but no clinical symptoms. Some showed rather marked symptoms for a day or so, and then made rapid and complete recoveries. In only one instance did all the pigs in a certain group show this immunity. In some groups, consisting of from 10 to 30 pigs, there would be one, or two, or three, or half a dozen or more, that would not sicken. These latter facts are mentioned to show that we were not dealing with occasional groups of pigs, all of which would be immune, possibly as a result of previous vaccination. The virus used for inoculating these pigs was our regular strain, of known virulence, usually bringing the pigs down in seven to ten days.

A particularly bad feature in connection with this natural immunity is the unsatisfactory outcome of serum tests when such a group of pigs is used. It was necessary for us to test a certain batch of serum three times this fall, because the virus check pigs failed to sicken in the first and second tests. The serum ultimately proved to be potent. These wide variations in immunity may frequently give false indices of the potency of the serum being tested. This can easily be the case if the serum test pigs possess unusual immunity and the virus control pigs do not. Of course this difficulty can in a large measure be overcome by getting whole litters for serum testing, but experience has shown this to be extremely difficult, except at great expense.

In our work in Minnesota, it has been our plan to keep only one strain of virus, and use this same strain both for serum production and serum testing, as well as field use. Our strain is passed at frequent intervals through small susceptible pigs, in order to keep up its virulence, and increase it, if possible. We

have had it up to the point where it killed on the sixth day. Between passages the seed virus is kept in sealed containers, without any preservative, at a temperature of about 40 degrees F., and in a dark place. The particular strain with which we are now working has already been passed through 103 pigs, and we are now awaiting the 104th generation.

To return to the discussion of the double treatment, it may be said that there are a number of reasons why it has failed in certain instances. One of these is that we may have been using doses too small for safety, that is, the dose of serum usually recommended may not be large enough to offset all of the variations and chances for error that are met in actual work with the double treatment. One of these factors has already been discussed, namely, the variations in natural immunity possessed by different hogs. Those that are more susceptible than others are less able to stand the double treatment unless they receive sufficient serum to make up for their deficiency in natural immunity. Of course the veterinarian has no way of measuring the natural immunity of individual hogs, but if a herd of hogs to be given the double treatment, have come from a locality where the disease is not and has not been prevalent, it is safe to assume that the hogs' natural immunity is not very great.

Another factor, already briefly referred to, is the possibility of hogs having been infected prior to the administration of the double treatment. If there is the slightest suspicion that this is the case, due allowance should be made for it, and the doses increased. By all means warn the owner of possible bad results.

Still another source of error lies in underestimating the weight of different hogs, and the consequent danger of too small a dose of serum. We should always try to make our mistakes on the safe side. It is extremely doubtful if harm can come from giving too large a dose of serum.

The selection of the proper syringe is an important question. The all-metal syringe should never be used in administering serum, on account of the possibility of giving too small a dose of serum unawares. It may seem unnecessary to mention this,

but an instance is only too fresh in the memory of the writer, where a veterinarian used a 4 c.c. all-metal syringe to vaccinate a herd of hogs and disastrous results followed. A new syringe should always be measured for accuracy, and in case it is found to contain less than is indicated by the guage, due allowance should be made for the discrepancy in measuring doses. There are a number of syringes in general use, and it is very much a matter of personal choice in attempting to say which is the best. As to capacity, the size holding 30 c.c. seems to have the preference over other sizes.

Another point, already discussed at some length, is the virulent blood (virus) used in double vaccination. We cannot always keep the same lot of virus on hand for use with the serum against which it has been tested. If several strains are kept going in the laboratory, we should be careful not to select virus of a greater virulence than that used in testing the serum. Veterinarians in no case should make the mistake of securing serum from one source, and virus from another, and then using the two in conjunction.

Some rather disastrous results following the use of the double treatment were called to the attention of the writer several months ago. A rather careful investigation showed that there could be little doubt that the serum used had not been potent. In a rather roundabout way, information was obtained concerning some unsatisfactory results, in another state, with serum and virus furnished by the same company. But the interesting fact was that the trouble was evidently due to a lack of virulence of the virus. Hogs given the double treatment subsequently died of cholera, several months later. These bad results were obtained several months before the bad results first referred to. It would appear from the facts at hand that the company, upon hearing of the first bad results, due to a weak virus, imported a new and more virulent strain, and sent it out with the same serum that had been tested against the weak virus. The trouble could have been averted by retesting the serum against the new strain of virus.

In administering serum care should always be exercised to see

that the hog gets all the serum intended, that there is none left in the syringe, due to a leaky plunger, and that as little of the serum as possible exudes through the skin wound after withdrawing the needle. By pinching the skin at the point of injection, as the needle is withdrawn, we can overcome this to a large degree.

Finally we should keep in mind the possibility of the deterioration of the serum, that is, loss of potency between the time when it is used and the time when it was tested. This factor is probably of no very great importance, under ordinary conditions. At the same time we do know that serum will gradually lose potency, especially if not kept under proper conditions. Bearing in mind all of these possibilities, the easiest way to avoid trouble with the double treatment would be to give a generous dose of serum. This certainly seems to be a wise procedure where so many chances for error present themselves. Larger doses mean additional expense to your client, but it is pretty good economy, if we wish to build up a reputation for the double treatment, not to mention the additional safety afforded.

The following conditions are the usual ones where a veterinarian would be justified in using the single treatment:

(1) In a herd that has been recently infected with cholera.

(2) In a herd where the disease does not exist, but near an infected herd, and the hogs will be ready for market within a month. Breeding stock to be kept over may be given the double treatment after the rest of the herd has been marketed.

(3) For pregnant sows, in the advanced stages of the gestation period, when it is necessary to protect them.

(4) For protecting young pigs, on infected premises, until such time as they will be old enough to receive the double treatment.

(5) To satisfy the requirements of certain states, in the inter-state shipment of hogs, unless the double treatment is specified.

(6) To protect hogs going to a fair or show.

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*(To be concluded in the next issue.)*

# VIRUS CARRIERS AS FACTORS IN THE SPREAD OF FOOT-AND-MOUTH DISEASE.

By John R. Mohler and Adolph Eichhorn, Washington, D. C.

The object of this article is to bring before veterinarians who do not have access to foreign literature certain data on the so-called virus carriers of foot-and-mouth disease and their relation to the spread of this infection, particularly since veterinary literature published in English does not consider this feature in connection with the control of the disease.

It is well known that many of the infectious diseases of man such as typhoid fever, cholera, plague and diphtheria, are spread by so-called bacillus, or virus carriers. The persons who become carriers either harbor the pathogenic organisms in their bodies after their convalescence from the disease, in which instance the recovery preceded the elimination of the germs, or they harbor and eliminate the bacteria without developing the classical form of the respective disease (as in walking typhoid, in which apparently normal persons harbor the typhoid organisms). The length of time in which these carriers may disseminate the pathogenic organisms varies considerably. It has been proved that typhoid carriers may spread the disease for several years after their recovery from the affection.

So-called virus carriers may also occur in different diseases of animals, although definite data on virus carriers among animals has been established only in foot-and-mouth disease, Malta fever, and equine influenza (Poels). The possibility of virus carriers in other diseases of animals such as hog cholera (Hutyra) has been intimated by many prominent authorities, but unreproachable proof has been furnished for only the three diseases mentioned above. Poels in his experiments with equine influenza succeeded in infecting susceptible animals with the semen of a stallion which had recovered from the disease about a year previous to the experiment. This observation has also been confirmed by other investigators.

It has been definitely demonstrated that the *Micrococcus melitensis,* the organism of Malta fever, has a passive existence in the body of infected goats, exercising its pathogenic effect when it gains entrance to the human body. Such goats, when carriers of the virus of Malta fever, may infect other susceptible goats, and are one of the important factors in the dissemination of this disease through the ingestion of their milk by human beings.

The occurrence of virus carriers after the recovery of foot-and-mouth disease was first recognized by Loeffler in 1904. This discovery is of special importance in countries where the eradication of this plague is conducted with only quarantine and veterinary police measures.

In the study of foot-and-mouth disease in 1904, Loeffler had only limited funds at his disposal, and therefore he could not afford to purchase experimental animals to have them slaughtered after being used, since the difference between the breeding value which he had to pay and the slaughter value was considerable, and he therefore could use only a limited number of animals in his work. Consequently, he arranged to borrow cattle from herds in which no infection had existed. These animals, after contracting the disease experimentally and undergoing complete recovery from the infection, were placed in a separate stable for a period of several weeks, and then following a thorough disinfection were returned to their owners. In spite of the return of a large number of such cattle, the dissemination of the disease by them was not established, although no attention was paid at that time to the possibility of the spread of the infection by these animals acting as virus carriers. In July, 1904, 12 yearlings which passed through the disease were returned to their owners. The animals were kept all through the summer in the pasture, exposed to the sun, wind and rain. In the early part of December they were placed in two different stables with other cattle. In one of the stables a cow standing next to one of the recovered animals developed foot-and-mouth disease. No infection occurred in the second stable. Since it was impossible to establish any other source of infection, it was accepted that one

of the animals coming from the experimental station introduced the disease. Accordingly, the virus had to remain active on or in this animal for 4½ months. As these yearlings after recovery were kept in the pasture all summer, exposed to the sun, wind and rain, it may be safely assumed that the virus could not have remained on the surface of the animals in a viable state, and therefore Loeffler believes it was probably present in and disseminated from the mucous membrane of the upper air passages. Although this could not be established with positive certainty, nevertheless this observation was of great importance, and therefore Professor Loeffler immediately informed the proper authorities of his findings and suggested that all animals which have been used for experimental work on foot-and-mouth disease should be slaughtered after the conclusion of the experiments. Loeffler also concluded that no animal which has recovered from foot-and-mouth disease should be permitted to be brought into channels of commerce.

The outbreak of 1906 and 1907 in the vicinity of Griefswald afforded the opportunity of making extensive observations, which indicated the importance of virus carriers in the spread of foot-and-mouth disease.

On an estate consisting of two separate farms, thirty animals became affected with foot-and-mouth disease in the barn of one of the farms in October, 1906, and the forty-five cows in the barn of the other farm were immediately subjected to serum immunization against the disease. In the early part of November, 1906, the disinfection on the farm where the thirty animals were affected was concluded, and the quarantine was raised. On the 15th of January six of the recovered heifers were brought into the stable containing the immunized cattle, and were so placed that only at each end did they come into contact with a cow which had not been affected by the disease. On the 15th of March, two other heifers which had passed through the disease in October were brought into the cow stable. On May 25, all the animals were driven to the pasture and remained there during the day. In the evening they were driven into a corral and remained there

during the night in close contact with each other. On the 29th of May one animal commenced to salivate. The attending veterinarian on subsequent examination found an erosion on the lip the size of a dollar and a blister on the tongue the size of a hen's egg; and in another cow a blister was likewise seen on the tongue. During the following few days, the entire herd became affected. Three cows which had been shipped away on the 27th of May carried the infection with them and contracted foot-and-mouth disease several days after reaching their place of destination.

It appeared quite evident that the infection was transmitted by a virus carrier existing among the heifers which had apparently recovered from the disease. As long as this animal remained among recovered animals and in direct contact with them, it failed to give rise to any infection. Only after coming into close contact with healthy susceptible animals which had lost their passive immunity from the serum injections, did it transmit the disease. Seven months had passed since the raising of the quarantine. An introduction of the virus from any other source was excluded, since no new animals were brought into the herd, and since the disease had not existed in the surrounding country for a considerable distance.

In another instance foot-and-mouth disease broke out in the middle of November, 1906, in a herd of 163 cattle, and infected all of them. By the middle of December, these animals had recovered. On the 22d of December, the disinfection of the premises had been concluded and the quarantine raised. On February 15, a breeding bull with two other bulls was purchased and tied in the cow stable. On the 1st of March, the breeding bull was taken into the stable containing only young animals, where 56 heifers which had passed through the disease in November, were stabled. The bull was placed in an exercising enclosure which was separated from the other part of the stable by railings. The animals could lick and otherwise come into contact with each other. It was also conclusively established that the bull broke loose several times and mixed with the heifers. On March 15, he was taken out of this stable and placed in

another in which 22 steers stood for 14 days. On the 17th the bull showed an inappetence, and on the 19th the attending veterinarian diagnosed foot-and-mouth disease. The steers standing opposite him also showed the acute form of the disease, thereby indicating that they contracted the disease from this bull. The two other bulls in the cow stable remained well. It is therefore apparent that the affected bull contracted the disease from some of the apparently recovered heifers which had acted as virus carriers, three and one-half months after their apparent recovery.

On another occasion in the vicinity of Griefswald the disease broke out among the cattle on a large estate. On December 6, after a thorough disinfection, the quarantine was raised. On January 25, twelve of the recovered animals were taken to a stable which was located a long distance from the estate, in the suburb of Griefswald, where these cattle were placed with other stock, principally calves and yearlings. Several days later the disease broke out among the latter animals.

A similar case occurred in the stables of a cattle dealer where 60 milch cows and 12 other animals became affected with the disease. In the middle of December, the disinfection had been completed, and the quarantine raised. In consideration of the character of his business, the owner was not given permission to resume trading in cattle until January 16. During the period from the 16th to the 25th of January, he added to his stock 17 cows and 4 bulls, which were placed among 38 of the apparently recovered animals. The stable had cement floors, cement walls, smooth cement ceiling, cement feed boxes and iron frames to the windows. There was no wood-work whatsoever about the stable. There were no sharp angles in the entire stable, and it was therefore particularly suitable for thorough disinfection. The disinfection was carried out with the greatest care by the city authorities, in view of the business of the owner, but on March 1 foot-and-mouth disease was established among the newly introduced animals. The infection was transmitted without doubt by a virus carrier which must have been among the recovered animals.

(*To be concluded in the next issue.*)

# DISSEMINATION OF TYPHOID AND ITS PREVENTION.

By O. C. Newgent, D.V.M., City Veterinarian and Food Inspector, Terre Haute, Indiana.

It is not my object to find fault with my Brother M.D., that I choose this subject, but to give the Veterinarians some points on the way Typhoid can be disseminated and prevented. In the first place we should find out the synonyms and definition of Typhoid Fever.

*Synonyms.*—Enteric fever, Gastric fever, Nervous fever, and Abdominal Typhoid fever.

*Definition.*—An acute, infectious, febrile affection due to a special poison, characterized by insidious prodromes epistaxis; dull head-ache, followed by stupor and deliriums; red tongue, becoming dry, brown and cracked; abdominal tenderness; early diarrhea, and tympany, a peculiar eruption on the abdomen. Rapid prostration and slow convalescence. A constant lesion of Pyers patches. The mesenteric glands and enlargement of the spleen and the presence of *bacillus typhosus* in blood, urine, glandular sections and from the intestinal discharge of diseased persons.

*Causative Agents.*—The *bacillus typhosus* which was discovered in 1880 by Eberth and Koch, and was first secured in pure culture from the spleen of lymphatic glands, and four years later by Gaffky.

*Morphology.*—The bacillia is both saprophytic and parasitic. The organism is a short, stout bacillus about 1-3 microns in length and 0.5-0.8 microns in width. The ends are rounded and it is exceptional for the bacilli to be united in chains. The size and morphology vary with the nature of the culture medium and the age of the culture.

When grown in bouillon the typhoid bacillus is very slender. In milk it is stout. Upon agar and potato it is thick and stout, and in old gelatine culture it forms long filaments. The organisms are actively motile and are provided with numerous flagella,

which arise from all parts of bacillus and are 10-20 in number. They stain well by Loffler's method. The movement of the short bacillus are oscillating; those of the longer bacilli serpentine and undulating.

*Dissemination.*—There are a number of ways in which this disease is disseminated: First, water; second, by food substances; third, by flies; fourth, by dust; fifth, by contact; sixth, by typhoid carriers.

*By Water.*—Many wells, springs, and small streams are infected for longer or shorter periods, especially during autumn and early winter, and river water where it is unfortunately too intimately connected with sewerage disposal and water supply. Some very severe epidemics of typhoid fever have been definitely traced to contaminated water supply, both in this country and in Europe.

For instance, in an outbreak at Plymouth, Pa., more than a thousand cases of disease resulted in a small community from throwing out the bowel and kidney discharges of a patient, upon frozen soil in the vicinity of a stream from which the town was furnished with water. A spring rain washed these discharges into the stream and soon after the whole community was infected.

Well and spring water can become infected by faulty construction of privy vaults in small towns and country. Chickens, dogs and rats carry the human excrement to wells and springs. Water pumped on floor and allowed to run or drip in well, over which chickens, dogs, and even people travel, can infect water. Rats digging holes in masonry and dropping in the water, also infect it.

*By Food Substance.*—Food that is usually consumed in the raw state may be the means of conveying disease. Such as oysters and other shell fish, which have come into particularly bad repute in this respect. This is due to oysters grown and fattened near sewer outfall. Water-cress, lettuce, raddish, or any vegetables or fruits which are liable to become in contact with contaminated water or spray.

The danger of milk is not due to contamination from the cow. Cattle do not suffer with the disease. Milk is infected

only when contaminated water is used "dishonestly to dilute it" or when the pails and cans are washed inadvertently with such water, or when the germs enter it from the hands or other parts of the body of persons who either expel them chronically or who have been associated with active cases of typhoid.

One great danger about milk is that typhoid germs multiply actively in it without perceptibly changing its appearance.

There have been outbreaks of fifteen to twenty cases of typhoid traced to one milk man, whose daughter was very ill of typhoid. This man nursed the sick, milked the cows, washed cans, and delivered the milk, "also the fever." Typhoid sprang up all along the milkman's track.

Another common way for the milk man to disseminate typhoid is by refilling bottles without washing which had come from residents in which patients are suffering with typhoid fever.

*By Flies.*—Contamination of various articles of food by the wandering house fly, has long been a recognized possibility, but its importance and frequency have only recently become known.

The severe visitation of typhoid fever in the camps of American soldiers during the Spanish-American War is in large part plausibly attributed to infection of this character. Lime was used for disinfecting the latrines of these camps and flies with whitened feet were subsequently seen walking over food.

Not only may bacilli stick to the legs and wings of these insects, but if swallowed they may survive the passage of the alimentary tract.

Typhoid has been isolated from house flies captured in houses in Chicago in the neighborhood of badly kept privy vaults used by typhoid fever patients. And it has been shown experimentally that living bacilli may remain in or upon the body of flies for as long as twenty-three days after infection.

It is possible that other insects such as cockroaches may in a similar way act as mechanical carriers of typhoid fever to food substance.

*By Dust.*—Typhoid bacilli may conceivably sometimes be inhaled in infected dust, but according to our present knowledge

such mode of infection must be extremely rare. This seems to have been an important factor in the causation of typhoid fever among the British troops in South African war.

*By Contact.*—Under the head of contact may be included those cases of infection due to particularly direct and immediately transferred, from the infected to the healthy. The liability of those who nurse typhoid fever patients to contract the disease is well known.

Since a drop of urine or a small particle of fecal matter may contain many thousand of typhoid bacilli, it is safest to regard the immediate surroundings of all typhoid patients as infected, and to institute appropriate precaution. In some cases contact infection may occur when the patient is still in the incubation period of the disease.

Certain individuals have been found to discharge typhoid bacilli in the stool or urine for as long as eight to eleven or even twenty-five days before the malady has become clinically manifested.

Children seem to suffer not infrequently from a mild, ambulant unrecognized form of typhoid.

In almost countless ways typhoid bacilli may find access to the alimentary tract of attendants or associates, causing direct infection; unquestionably more common than is generally recognized.

*Typhoid Carriers.*—The term *Chronic Typhoid carriers,* has been applied by German writers to those persons in whose bowels or bladder discharge, typhoid bacilli can be detected at least ten weeks after convalescence.

Typhoid germ carriers are unquestionably responsible, not only for occasional infection of water and milk, but for direct contact infection of the immediate associates and comrades.

Soper has brought to light a remarkable instance of a New York cook, who was the innocent cause of some twenty-six cases of typhoid fever in seven different families. In the majority of these as already pointed out, the bacilli seem to have established themselves in the gall-bladder.

Attempt to secure an internal disinfection and prevent the continued elimination of bacilli have so far been unsuccessful.

In one typhoid-ridden village, in Trier it was found that 26.6 per cent. of all cases originated from contact with carriers.

*Prevention of Typhoid or Sanitary Measures.*—When one is compelled to live in a house or a neighborhod where typhoid fever prevails, he should make it his infallible rule to eat and drink only such food as have been recently cooked to above scalding temperature. Salads should be avoided; all water and milk should always be scalded before use; and fruits should be pared. The typhoid fever organism is very susceptible to heat, and slight boiling or even a good strong scalding is sufficient to destroy it.

So far as possible the house fly should be screened out of the house, while any that gain access should be diligently pursued and destroyed.

The discharge of the sick should be thoroughly disinfected before being thrown out upon soil or into latrines.

To bowel and kidney discharge should be added an equal volume of 5 per cent. carbolic acid solution or 5 per cent. solution liquor cresol compound. Soiled linen should be put at once in boiling water. Soiled hands should be washed for five minutes in mercuric chloride water, 1 to 1000, colored with methylene blue to distinguish it from ordinary non-poisonous fluids.

The building in which typhoid fever patients have died should be thoroughly disinfected. First, by thoroughly washing the walls and ceilings and if plastered should be washed or brushed over with a 1-1000 solution of mercuric chloride in eight gallons of water. All washable articles should be placed in a tub and to each gallon of water four ounces of a forty per cent. solution of formaldehyde should be added, and these should soak at least one hour.

For unwashable articles, place in a tight box or room or closet and then fill with formaldehyde gas and moisture.

*For Room Disinfection.*—Measure the room, and for every one thousand cubic feet use two pints of formaldehyde and six

and one-half ounces of commercial permanganate of potassium. Place a large wash bowl or crock in center of room, put in the required amount of permanganate of potassium and lastly pour in the required amount of formaldehyde and retire immediately. Keep room closed for at least three hours. Open and air thoroughly. Owing to the difficulty of carrying out these sanitary precautions in localities where house flies swarm and bad water is prevalent, and the local sanitary conditions are unknown, it is advised that field men receive preventive inoculation.

*Vaccination against Typhoid Fever.*—Typhoid fever is a self-limited disease. By this it is meant that if the patient does not die during the progress of the disease the body reacts against the invading micro-organism with the production of various antibodies known as agglutinins-opsonins and these antibodies limit the disease to a variable number of weeks, after which the person recovers and the virus (the germ) disappears from the body.

The preventive inoculation for typhoid fever depends upon this fact. In recent years it has been discovered that by injecting under the skin a small quantity of dead typhoid of known strength the body would react against these organisms in the same way as against the living bacteria in the bowels and with the same results, namely, the increase in the body of antibodies which persist for a considerable period, rendering the person resistant to the disease.

*Preparation of Vaccine.*—The vaccine is prepared from an old culture which has little or no virulence, but which yields an abundant growth on agar. After eighteen hours' incubation on a broad agar surface the culture is washed off with sterile salt solution and is killed by heating at 55-56° C. for one hour.

The suspension is standardized by counting the number of cells it contains and then diluted so that 1 c.c. contains 1,000,000,000 bacilli.

A preservative ¼ per cent. tricresol is added and the purity of the suspension thoroughly tested by cultivation and animal inoculation.

The first dose consists of ½ c.c. or 7½ minim, which contains 5,000,000,000 killed typhoid bacilli suspended in salt solution. The second and third dose of 1 c.c. or 15 minims which contains 1,000,000,000 bacilli each.

The inoculations are made at intervals of ten days, the entire course thus requires twenty days.

The inoculation is always made under the skin, never into the skin, or into the muscle. The site usually selected is the arm at the insertion of the deltoid muscle. The arm should be cleaned as for any other operation. First, washing the arm in tincture of iodine diluted in an equal volume of alcohol. This method of disinfection has proved satisfactory. The skin is painted with iodine before and after the injection.

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First Annual Veterinary Short Course, University Farm, St. Paul, Minn.: The first week in March we received from our esteemed friend and collaborator, Prof. M. H. Reynolds, Chief of the Veterinary Division of the University of Minnesota, a programme and announcement of the first annual veterinary short course, which was held at that institution February 22d to 26th, inclusive. Surgical subjects were featured at this course, with Prof. John W. Adams, of the University of Pennsylvania Veterinary School as the demonstrator. In view of the fact that they were compelled to start two weeks later than what Prof. Reynolds considers their most favorable season, and the announcements could only be mailed a few days before the course opened, an enrollment of 21 was considered very satisfactory. A splendid photograph of those in attendance was also received, but lack of space forbids its publication at this time.

The California State Veterinary Medical Association held its quarterly meeting at Fresno, March 10, 1915. The association convened at the Hotel Fresno, at 9.30 a. m., and afterward adjourned to Kearny Park, eight miles out, where a large number of animals had been gathered for a clinic. This is the first of the *quarterly* meetings and proved a great success.

# IRON AND ARSENIC HYPODERMICALLY.

By G. H. Conn, D.V.M., Prairie Depot, Ohio.

During the past several years we learn that arsenic has been attracting the attention of many of the practitioners of regular medicine especially when used hypodermically. It is used largely in syphilis and similar infectious diseases of the human family. Salvarsan or 606 which has gained such a place in the treatment of syphilis and allied conditions is an arsenic preparation. Iron has also become quite popular in the practice of regular medicine in the treatment of several conditions; while it is true that we do not have the same class of cases in which these have been used so successfully in the treatment of people, yet we find many cases in which iron and arsenic are indicated. It is an evident fact known to most veterinarians that the continued use of arsenic orally will ofttimes seriously derange the stomach of the animal which is taking the drug.

Iron is more of a food than a medicine; it is found in sufficient quantities in most foods to supply the needs of the body and enters into the composition of the blood where it is known as hemoglobin. The sulphate of iron and the tincture of the chloride of iron are the preparations most commonly used; but iron given orally does not have the effects we would like, unless given over a long period of time, and then the results are often unsatisfactory.

Iron when given hypodermically is mainly of worth in anemia as furnishing a builder for the blood or enabling it to carry more oxygen; it stimulates the red blood cells to carry more oxygen; it seems to make the leucocytes more active.

Iron is indicated in anemia, convalescence following acute infectious diseases, debility from chronic indigestion and as an aid to nutrition.

Fowler's solution is the most common form of arsenic used in veterinary medicine and in fact is the only form that is used

to any extent in the larger domestic animals. Fowler's solution when used for some time, will sometimes upset the stomach in the larger animals, so it is necessary to be cautious in the use of it.

Arsenic is of most service in horses affected with chronic indigestion; horses that are affected with malnutrition, and practitioners find many of these, sometimes of value in diarrheas, and is known by some as a blood tonic. It is indicated and used in many of the respiratory diseases and seems to stimulate respiration. It is recommended and used in convalescence from the acute respiratory and acute infectious diseases.

It is one of the best if not the best remedy in skin diseases of animals and also in the human family; used for dogs affected with chorea.

Now when iron and arsenic are given hypodermically it does away with all these detrimental effects mentioned above, and besides the results are more uniform and when proper attention is paid to dose and administration, cumulative and toxic effects of these agents can be avoided. In using these agents the salts used must be soluble and non-irritating.

℞ Glycerophosphate of Iron (Iron Tonol) ....Gm. 4
Glycerophosphate of Sodium (Sodium Tonol) .....Gm. 4
Distilled water .....c.c. cxl

Sig: 15 c.c. average dose for average sized horse but may give 20 c.c. to a large horse.

℞ Cacodylate of Iron.....Gm. 3
Distilled water .....c.c. lxx

Sig: 10 c.c. intra-muscularly daily.

℞ Methylarsenate of Iron.....Gm. 2.5
Methylarsenate of Sodium.....Gm. 2.5
Distilled water .....c.c. lxx

Sig: 10 c.c. intra-muscularly daily.

℞ Cacodylate of Iron.....Gm. 3
Methylarsenate of Sodium.....Gm. 2.5
Distilled water .....c.c. lxx

Sig: 10 c.c. intra-muscularly daily.

If the action of arsenic is wanted without that of iron, the cacodylate, glycerophosphate or methylarsenate of sodium may be used in from 3 to 5 per cent. solutions of distilled water in 10 to 20 c.c. doses intra-muscularly daily.

These preparations should be given once each day for a period of 8 or 10 days and then a like period of rest. They can be repeated in a like manner after this intermission. They should be given into the muscular tissue. The dose can be slightly increased after the first intermission and the dangers from intoxication or cumulative effect of the drugs can be almost disregarded.

In proper dosage this should prove valuable in canine practice.

It seems very reasonable to me that arsenic used in the way described above might be indicated in the class of cases that *salvarsan* has been recommended by some investigators and that is in contagious pneumonia. It would interest me to have some one try this and report results.

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FARMERS' BULLETINS No. 612 and 638 treat of *Breeds of Beef Cattle* and *Laboratory Exercises in Farm Mechanics for Agricultural High Schools* respectively, and are prepared by W. F. Ward, Senior Animal Husbandman in Beef Cattle Investigations, Animal Husbandry Division, U. S. Dept. of Agr., and Daniel Scoates, Professor of Agricultural Engineering, Mississippi Agricultural and Mechanical College. Both are issued by the U. S. Dept. of Agriculture, and both are generously illustrated. The first mentioned has excellent cuts of Bull and Cow of the Shorthorn, Polled Durham, Hereford, Aberdeen-Angus, Galloway, Red Polled Devon, and Brahman, which, with the excellent descriptions, is very interesting and instructive. The second goes extensively into rope work, describing and demonstrating the technique in the tying of all kinds of knots, half hitches and hitches, splicing, making of rope halter, casting bull with single rope, making hobble for casting horses, etc. It also goes into repairing of machinery, fitting collars on horses, pulling stumps with machine, surveying, constructing drains, terracing, building, etc. It is full of information that is of interest to veterinarians.

# REPORTS OF CASES.

## REPORT ON PUNCTURED WOUNDS WITH REFERENCE TO INFECTION WITH THE BACILLUS TETANI.*

By G. E. Jorgenson, Lamont, Iowa.

Determination of the presence of Bacillus Tetani was made by recognition of the drumstick appearance of organisms while in stage of spore formation and, their being Gram positive, it was not possible to make a more conclusive investigation on account of lack of proper laboratory facilities. However, I am positive that there is no mistake.

*Case* 1.—Belgian mare, age 4; stepped on rusty nail which entered anterior part of frog, pursuing a course upward and backward, undoubtedly injuring the plantar cushion.

Treatment.—A careful cutting out of frog and dressing with tincture of iodine. 1,500 units of Tetanus Antitoxin injected. Staining and examination of a suspension made of material (dirt) around wound revealed Bacilli Tetanus, Streptococci, etc. Prompt recovery followed.

*Case* 2.—Young mule colt, 2 weeks; suffered from umbilical phlebitis; when called (after 3 days) found the colt suffering from what I then diagnosed as a mild form of septicemia.

Treatment.—A careful cleansing (surgical) of navel; internally, symptomatic treatment advised. Antistreptococcic Serum and Tetanus Antitoxin. Owner laughed at me, so I admonished him against leaving the little fellow in the filthy surroundings in which he was and went home. Four days later again called, and found patient in first stages of tetanus, from which he died.

No bacteriological examination made, as the presence of Bacilli Tetani were only too evident.

*Case* 3.—Percheron gelding, 2 years old; became frightened and ran into a wooden paling one inch in diameter. It entered at level of head of humerus, passed upward under mastoido-humeralis muscle, making a wound seven inches deep.

A careful cleansing given and the use of Antitoxin suggested, but owner purposed to take a chance. In six days tetanus developed.

*Case* 4.—Percheron gelding, 5 years old; ran away and fell

* Reprinted from *Mulford's Veterinary Bulletin*, November, 1914.

down on a harrow with teeth turned up, causing a puncture of gluteal muscles about four inches deep.

Treatment.—Careful cleansing, counter-opening for drainage made; 1,500 units Tetanus Antitoxin administered.

Uneventful recovery followed. Examination of earth on harrow teeth revealed Tetanus Bacilli and the usual pus-producing organisms.

*Case* 5.—Mule, 3 years old; trod on a nail in muddy barnyard. Entered posterior part of frog, injuring navicular bone.

Treatment.—Careful cutting away of frog, thorough cleansing and injection of tincture of iodine; 1,500 units Tetanus Antitoxin.

Recovery was somewhat delayed on account of suppuration; however, tetanus did not develop in spite of presence of Bacilli Tetani in suspension in sterile water of litter and mud on foot.

*Case* 6.—Belgian colt, 4 weeks old; umbilical phlebitis, followed by pyemia and multiple abscesses.

Treatment.—Drainage provided in abscesses already open; those not open were evacuated; internally, symptomatic treatment was given, together with administration of 10 c.c. of Antistreptococcic Serum and 500 units Tetanus Antitoxin. Two days later another dose of Antistreptococcic Serum was given. Recovery good.

Examination of pus from navel showed no Tetanus Bacilli; however, they were no doubt present or had been, as the hygienic surroundings were bad.

NOTE.—This case report of Dr. Jorgenson's calls to the practitioner's attention the great importance of the use of tetanus antitoxin in nail wounds of the foot of the horse and other wounds that predispose the patient to an attack of tetanus. Too much emphasis cannot be placed upon the importance of prophylaxy in this class of cases. Infection with the *bacillus tetani should be prevented* by the administration of an immunizing dose of tetanus antitoxin to all patients suffering from wounds, the nature of which predisposes them to an attack of this very fatal malady. Had Dr. Jorgenson's clients who owned the subjects of cases 2 and 3 fully realized the danger to which their animals were exposed, and had profited by the wise counsel of their veternary medical adviser, those cases would also have had the happy termination of case 4. It should be a routine procedure with all veterinarians to immunize early in their treatment, all horses suffering with deep punctured wounds of the feet, and other wounds which in their judgment predispose them to tetanus.—[*Editor.*]

## INTESTINAL OAT-HAIR DUNG-BALL CALCULUS IN A MARE.*

BY HENRY B. EVE, M.R.C.V.S., Folkstone, England.

*Subject.*—A heavy vanner, the property of the South Eastern and Chatham Railway Company, Hythe.

*History.*—The animal concerned had only been doing its

* Reprinted from the *Veterinary Journal*—London. Illustration also reproduced from our esteemed English contemporary.

usual work, and appeared all right over-night when fed, and did its usual round next morning, when carman noticed it amiss, and brought it home, and I was 'phoned to atend on October 19.

*Symptoms.*—On arrival I found the mare showing symptoms of engorgement of the stomach, with gastric tympany, intermittent colicky pains, pawing with fore-feet, countenance haggard, eye distressed, back arched, belly distended, respiration hurried. The animal frequently had a tendency to rest its hind quarters against the side of the stall, and bowels were severely constipated, and habitually so. When removed to a loose-box mare stuck her nose in a corner for a time and frequently backed into a corner, indicating (stoppage of the bowels) double colon impaction, and

Oat-hair Concretion (Dung Ball).

at times sat on her haunches like a dog and raised itself from the ground like a cow with milk fever endeavoring to get up, which position appeared to give relief for a time. Accelerated pulse and temperature elevated. Straining as if wanting to stale continually.

*Diagnosis.*—Intestinal obstruction, probably a twist or calculus.

*Prognosis.*—Unfavorable.

*Treatment.*—Gave an oleaginous purgative and sedative

draught, and adopted usual treatment, had animal walked about. (Noon) internally applied counter-irritant to abdomen. Administered morphia and atropine, hypo. (6 p. m.) revisited, gave hypo., eserine and pilocarpine and stimulants. (11 p. m.) hypo, strychnine, no result.

Next day gave arecoline but with no satisfactory effect, only produced salivation, and no fæces were passed, but hastened death, which occurred on the 21st.

*Remarks.*—As anticipated, the mare died, and, unfortunately, I was unable to be present at post mortem, but the knacker man kindly informed me that the "guts" were twisted, and in addition that they found a huge dung-ball calculus, which he kindly sent by carrier for me to see. It was about the size of a large cocoanut and weighed 3 pounds 15 ounces (see illustration).

*P. S.*—This is the second case I have encountered recently of impaction due to the same cause. The first one I came across when meeting Mr. W. W. Gulleford, M.R.C.V.S., Lympne, Hythe, in consultation. He made the post mortem and verified diagnosis, which defied all treatment.

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## PATHOLOGICAL HYPERTROPHY OF THE HEART IN A WORK HORSE.

By Robert W. Ellis, New York, N. Y.

The subject was a gray gelding of the light draught type, about twelve to fourteen years old, and was what is commonly termed by truckmen and drivers as a "bad summer horse." In other words, he stood the heat badly, and could only be worked on part time during the hot spells of summer weather and then especial care had to be exercised in handling him; and even during the fall and winter months immediately preceding his death, it was noted that he fatigued easily. It so happened, on account first of a foot injury, that laid him up three weeks, and after about ten days of work, an attack of nasal catarrh that laid him up five days, that he had had about four weeks' idleness, followed by less than a week's work, when he lost his appetite, but showed no symptoms of serious illness. He had a rise of temperature of 103 degrees F. and was put on tonics and diffusible stimulants; which resulted in the return of his temperature to normal, and a

partial return of the appetite at the end of the second day. Early in the morning of the third day, however, the horse took a sudden turn for the worse, broke out in a cold sweat, swayed, and finally fell, dying suddenly. Having always been of the opinion that this horse's heart was "not right," I held a post mortem on him immediately after death, while the organs had the freshness of life still in them, and the following lesions were found in the heart and lungs. The heart presented a condition of pathological hypertrophy and fatty infiltration. A heavy layer of fat, probably two inches in thickness, covered the exterior of the left auricle appendix; on cutting through this, and opening the auricle appendix, it was apparent that the fat had invaded its walls, pericardium, myocardium and endocardium; materially lessening the capacity of the cavity; also encroaching upon the bicuspid valves. The blood in the auricle was of a very dark color (still warm and steaming); and upon examination of the lungs, it was apparent that there was also marked stasis of the pulmonary circulation. (Pulmonary veins, pulmonary arteries, and bronchial arteries, all filled with the same dark colored blood), but no evidence of inflammation of the lung tissue. The heart was apparently half as large again as a normal heart, weighing approximately 15 to 16 pounds. All other organs appeared to be normal except the liver and spleen, which had drops of fat scattered through their substance.

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## STRANGULATED SCROTAL HERNIA.*

By F. Morton Wallis, M.R.C.V.S., Halstead, Essex, England.

Some time since I received an urgent call to attend a yearling cart colt which was described as badly "griped." On arrival I found the animal sweating profusely, and showing all the usual symptoms of great pain. On examination I found strangulated scrotal hernia the evident cause. The scrotum was full and hard, and on passing my hand into the rectum I could feel the continuance of the bowel descending into the scrotum also full and tense. The case being very serious and urgent, I at once adopted a line of treatment *which has yielded me success before.* I injected hypodermically 1 gr. each of physostigmin salicylate and pilocarpine hydrochloride. On release the colt at once lay down, turned on its back, which I took advantage of to secure his legs

* Reprinted from the *Veterinary Journal*, London.

and keep him in that position for about three-quarters of an hour, with a bag of chaff either side to assist.

Having emptied the bowel as far as possible on first examination, in about twenty minutes after the injection I passed one hand up the rectum and placed the other on the scrotum, and by gentle manipulation, aided by the action of drugs named above (and without which, in my opinion, my manipulations would have been absolutely useless), I had the parts reduced and the colt up under the hour.

An anodyne draught, quite and careful feeding completed the cure, and three weeks after I castrated him by the usual covered operation, and he is now a well-grown and promising colt.

I do not claim that there is anything unique in my treatment, as, of course, others may have done the same, but I have never heard of its adoption, and knowing how many veterinary surgeons fear to use these drugs in much less complicated cases, "I hae ma doots." I am satisfied that the want of confidence in and fear of these drugs is mainly caused by their not being adopted early enough in the cases. After large use of these drugs for many years now, I can honestly say I have never had the least reason to suspect them as being the cause of any untoward circumstances in any cases I may have lost where they have been used.

They are invaluable in the *earliest* stages of impaction of the bowel—impaction with tympany (here assisted by puncture of bowel)—and cases of choking. I never give more than 1½ gr. of each, and not often under 1 gr., but am most particular to buy only the best drugs.

One great advantage is that in some rare cases where you do not get the desired result, you can always follow on with a full dose of aloes without any fear whatever of the result.

NOTE.—The foregoing narration of a case of *strangulated scrotal hernia*, its treatment, and termination, is surely of unusual interest. Not only because of the unique methods of procedure and satisfactory result, but as showing the ready application and capability of the veterinarian in charge.—[*Editor.*]

## TUBERCULOSIS AND TUBERCULAR PLEURISY IN AGED ENGLISH BULL DOG.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

An aged English bull dog was presented at Dr. Ellis' office for examination and treatment, and in the doctor's absence I took

charge of the case. On examination I disclosed difficult respiration, a rapid heart, temperature 103.2 degrees F., general emaciation and an icteric appearance of the visible mucous membranes. Percussion in the standing position revealed a dull sound over the ventral half of thoracic cavity. Interrogation of the owner brought out the following history: A persistant diarrhoea, gradual loss in condition (despite a good appetite), and fatigue on slight exercise. Tuberculosis with pleurisy being diagnosed, and the gravity of the situation and danger to those associated with the animal being realized, its destruction was proposed, in which proposition the owner concurred.

The autopsy revealed the presence of three pints of a rusty colored fluid in the thoracic cavity, nodules over the entire pleura, also a pathological change in the lungs. Some of the material was submitted to Professor W. Reid Blair, Chair of Pathology, New York State Veterinary College at New York University for laboratory examination, who stated that the material was tubercular and that the lungs showed chronic tubercular broncho-penumonia.

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ACTIVITY ON THE GLANDERS QUESTION: The horse owners, State Department agriculture veterinarians and City Board of Health officials and veterinarians have got together on the glanders question in Greater New York, and we foresee excellent results as a consequence. Open fountains that have been closed are being equipped with faucets as rapidly as possible, so that the use of individual pails may be enforced. It is also recommended that the faucet replace the drinking trough in stables. The 11,000 stables in the city are to be examined semi-annually, and the horses' blood tested. The department of health is equipped to make the blood tests if requested, but urges owners to have horses tested by their own veterinarians. Identification chains will be put (by the Department of Agriculture) on all horses reported free from glanders by the Department of Health, and an identification card furnished to the owner. Auction sales stables will be required to sell only horses which have been examined for and found free from glanders. The Department of Agriculture is to establish a quarantine both for horses coming into and going out of the state.

# ABSTRACTS FROM EXCHANGES.

## ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

STRANGULATED SCROTAL HERNIA [*F. Morton Wallis, M.R.C.V.S.*].—Called in a hurry for a yearling cart colt supposed to be badly "griped," the writer found himself in the presence of a marked case of strangulated hernia. Scrotum full and hard, rectal examination showed the presence of the bowel descending into the scrotum. The case was serious and demanded immediate treatment, and the one *which has yielded success before* was resorted to by Mr. Wallis—1 grain of each physostigmine salicylate and pilocarpine hydrochloride were injected hypodermically, and as the colt laid down his legs were secured and he was put on his back and held thus for about three quarters of an hour. The bowel having been emptied, one hand was passed in the rectum, while with the other on the scrotum by gentle manipulations with the help of the effects of the drugs, the hernia was reduced and the colt allowed to get up completely relieved. He was castrated three weeks later.

This mode of treatment has been used by the writer for many years, and with the use of the drugs injected, he has never noticed any bad effects resulting.—(*Vet. Journal*).

INTESTINAL OAT HAIR DUNG BALL CALCULUS IN A MARE [*Henry B. Eve, M.R.C.V.S.*].—Heavy vanner mare while at work is noticed amiss. She shows symptoms of engorgement of the stomach with gastric tympanitis, intermittent colicky pains, pawing, haggard countenance, back arched, belly distended, respiration hurried. She frequently rests her hind quarters against the sides of the stall. Great constipation exists. Placed in a box stall she stuck her nose in a corner, frequently backed in a corner, at times sat on her haunches and when laying she rises as a cow. Pulse is accelerated and temperature high. She strains. Abdominal obstruction is the diagnosis. Purgatives, sedatives, counter irritation to the abdomen, eserine and pilocarpine, strychnine are successively prescribed. Also arecoline. The mare died the second day after being taken sick. A huge dung ball calculus was found with twist of the intestine. The ball weighed 3 pounds and 15 ounces.—(*Vet. Journal*).

PARALYSIS IN A CAT—RESULT OF FALLING FROM A GREAT HEIGHT [*F. C. Mahon, M.R.C.V.S.*].—Eighteen-months-old cat fell from a window 70 feet from the ground, she had only minor injuries, marked concussion of the brain and spinal cord. It laid inert for three days and gradually recovered, and a few months after had kittens without any trouble.

While playing with one of them, she had been seen to disappear into the space and was picked up from the concreted area surrounding the flat. The upper lip being injured and some incisives of the upper jaw broken off, these were attended to. There was no fracture, no pain, but the hind quarters were devoid of use and insensitive from the lumbar region to the tip of the tail. Local treatment of belladonna liniment, hot compresses, few drops of mustard oil on the spine were prescribed, and 5 minim doses of glonoin (homoeopathic) given in brandy every two hours. Constipation was overcome with glycerine injections. After a few days, improvement became manifest. Appetite returned, use of hind legs was noticed, gradually getting stronger, local stimulations, massage, strychnine brought a complete recovery in a little over twenty days.—(*Vet. Journal*).

RUPTURE OF ANTERIOR VENA CAVA [*Frank Chambers, M.R.C.V.S., G.V.S.*].—The subject was a mongrel bitch, 4 years old. Having lost pigs and fowls for some time, the owner suspected poison, and his suspicion strengthened when his dog entered his room and dropped dead at his feet. Post mortem revealed that the contents of the abdominal cavity were normal. The thoracic cavity contained a great quantity of blood, and a rupture 1.5 cent. in length was discovered in the anterior vena cava, three centim. from its origin. There was a large abscess through the muscular coat of the oesophagus, which was possibly the cause of the rupture by the pressure on the vein.—(*Vet. Rec.*).

SPASM OF THE DIAPHRAGM IN A BULLOCK [*J. B. Hare, M.R.C.V.S.*].—A stall-fed bullock in good condition was said to have "a heavy pant on him," and the author was called. He found the animal blowing very hard, as in a case of lung congestion, but there was also present unmistakable thumping due to spasm of the diaphragm. The symptoms had come suddenly. The temperature, 102. No appetite, no rumination. There was no distension of the rumen. A stimulant was prescribed, to be repeated after three hours. Half diet. Next morning everything was normal.—(*Ibid.*).

SPASM OF DIAPHRAGM [*T. I. Alexander, M.R.C.V.S.*].—Called in a hurry for a mare 12 years of age which, said the owner, was sadly "heaving," the author went and, before entering the stable, heard a thumping noise, resembling the beat of a large engine. It was from the mare which at each thump vibrated all over violently and presented a desperately worried appearance. Pulse, respiration, temperature were normal. The mare took mouthfuls of hay. The history revealed no cause, the mare had worked well the week before. The treatment consisted in full diet, rest and calomel in spirits aeth. nit. and aromat. spirits of ammonia. The condition did not improve until the third day, when recovery slowly started, followed rapidly. This case was the first the writer had ever seen.—(*Vet. Rec.*).

TUBERCULOSIS OF THE LIVER AND SPLEEN OF A LEMUR [*Satyendra Nath Mitter, G.B.V.C.*].—In making the post mortem of a lemur from the Zoological Garden of Calcutta, the author found besides the lesions of acute gastritis to which the animal had succumbed, a number of calcified nodules in the liver and spleen. Smears taken from the foci and stained with Zeihl Neelson's showed a large number of B. tuberculosis. The other organs appeared to be free from tubercular lesions. It is highly probable that the animal was infected through the alimentary tract.—(*Raymon Res. Labor. and Vet. Rec.*).

TUMOR AT THE BASE OF AN ANTLER OF AN INDIAN SPOTTED DEER [*By Same*].—The animal admitted in the hospital of the Bengal Veterinary College had a growth at the base of the velvety knob representing the newly growing antler on the left side of the head. The tumor extended across the head as far as the right antler and by pressure produced extensive oedema around the right eye. The tumor was soft, lobulated and covered with fibrous membrane. There were several minute sinuses discharging pus. On section, it was found made of a soft matrix in which were distributed several foci of yellowish fetid, granular and semi-liquid elements. Under the microscope, the growth had the appearance of myxomatous tissue with cartilaginous structure. It might be classed as a myxochondroma with mucoid degeneration of the matrix.—(*Ibid.*)

SCROTAL HERNIA IN A "RIG" [*Anon.*].—When but a few months old a foal had colic from right scrotal hernia. It was reduced and the colt was relieved. The same condition occurred

several times again at various times until finally reduction was not possible, strangulation was taking place and immediate operation indicated. Examination showed that the left testicle was in its normal position, but no trace of the right could be felt, the subject was a "rig."

During the operation, performed under anesthesia, with the parts well cleaned and disinfected, and the hernial sac exposed, it was found that this was abnormally long, extending along the perineum almost to the anus and as it had contracted firm adhesions with the surrounding tissues, it required careful dissection to isolate it. This was done without serious laceration. The sac well separated, opened hernia reduced, and the hand introduced in the inguinal sac as far as the external abdominal ring where the missing testicle was found. The various steps of the operation were concluded in the usual way and the animal made a good recovery, having only had a rising of temperature, which lasted a few days, and a paraphimosis which remained on for ten days. —(*Vet. Record.*)

## FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TUBERCULOUS ENDOCARDITIS IN THE HORSE [*Mr. Gagne*].—A ten-year-old mare, in rather poor condition, easily out of breath when put to work and having a capricious appetite is laid up for a few days, and by hygienic treatment improves so much that she is returned to work—light. One morning she is found lying dead in her stall.

The post mortem is made. The abdominal cavity presents nothing abnormal. In the pulmonary, there is a thick serofibrinous coating of both walls. The lungs removed show the heart, slightly hypertrophied and having on the top of the auricles a mass of fibrous tissue, compact, and firmly adherent to the inferior face of 3d. 4th and 5th dorsal vertebrae. That mass which in its superior part contained spongious bony tissue, surrounds the superior part of both auricles, the pulmonary artery and the aortic trunk. On being divided, its tissue is hard under the knife, and shows centers of various dimensions containing a caseous matter of tuberculous appearance. When the aortic trunk was open, vegetations of miliary tuberculous nature are observed and also small pustular patches which on pressure give exit to greyish fluid.—(*Rev. Veterin.*)

OESOPHAGEAL DILATATION IN DOG [*Mr. J. Darnaud*].—A two months and a half old Gordon setter pup refuses all food, although he is ordinarily very gluttonous. After general examination, a diagnosis is made of gastric trouble and the dog is put on milk diet with syrup of ipecac. But before he had the vomiting drug he threw out a triangular piece of bone, measuring 6, 7 and 8 centimeters. It was a piece of a calf ischium. Notwithstanding the irregular form of the bone and its rough edges, its passage and expulsion from the oesophagus did not seem to have given rise to any lesion as no blood was found on the bone nor sign of oesophagitis manifested.

Recovery was natural, but in spite of the excessive dilatability of the oesophagus was notwithstanding well striped and shown. —(*Ibid.*)

TREATMENT OF TETANUS [*J. Moret*].—"*All tetanic that sleeps is a tetanic that will recover,*" has been said by an eminent Italian physician, Baccelli.

With this idea, the author decided years ago to resort to make his patients sleep to vapors of ether administered by rectum. And in many he obtained recovery, except in one where the conditions and the requirements for the treatment had been deficient.

His *modus operandi* is as follows: A pharmacy vial, 90 grammes dimensions, is armed with a rubber tube which carries at its end a canula. The vial is three-fourths filled with ether and then put in a vase containing a sufficient quantity of very warm water, below boiling. The canula is introduced in the rectum, the evaporation of the ether takes place slowly and completely, the vapors are absorbed by the mucous membranes and general sensibility is dulled. The horse sleeps. This can be renewed every two hours or more, according to the cases. It is understood that a complete anesthesia is not necessary to be obtained, but only a relaxation of the tetanized muscles.—(*Soc. de Path. Comp.*)

CARDIAC INSUFFICIENCY IN A COW BY LESION OF TRICUSPID VALVE [*P. Chausse*].—Result of post-mortem examination. The heart of this cow was bifid, so to speak, because the right ventricle was rather abnormally dilated at its point. In opening this ventricle, the endocardium was found normal and without any abnormal or pathological alteration. The myocardium was normal.

The tricuspid was supple, thin, without degeneration or in-

flammation. But on its internal valvule, near its insertion, on the septum, there was a round opening which was continued in the auricle by the indication of a canal made by two parietal endocardiac folds.

There was no other anomaly in the heart. The foramen of Botal was perfectly closed. It is probable, says the author, that this perforation of the tricuspid was congenital and may have been the producing cause of the dilatation and hypertrophy of the right ventricle.—(*Rev. Path, Comp.*)

Cyst of the Mitral Valve in a Cow [*By the Same*].—Also detected at the post mortem of a cow slaughtered for general tuberculosis.

Normal otherwise, the heart presented in the aortic mitral valve, at its posterior insertion, a rounded cyst quite large, measuring 20 by 25 millimeters. The cyst was involved in the vascular walls, its contents were transparent, serous, clear, yellow and limpid. Its surface was smooth, its walls soft. Round it there was no inflammatory process nor degeneration. The cyst did not seem to have given rise to any manifestations or disturbance during the life of the animal.

The publication was interesting because of its rarity and of the large size of the lesion.—(*Ibid.*)

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Dr. William J. Rattigan With Kitchener's Army in France: In the Oswego (N. Y.) *Daily Palladium*, of February 27th, we saw a picture of Veterinarian Wm. J. Rattigan, of that place, dressing the wounds of some horses in the big hospital camp at St. Nazaire, near Paris, which picture, we regret to say, is not sufficiently clear for reproduction. Dr. Rattigan, who is a graduate of the veterinary school of Ohio State University, was appointed to a government position and was stationed on the Texas border, eventually reaching Vera Cruz. He was still in the south when the European war broke out, when an offer from an English officer buying horses in this country induced him to go to the other side, where he is caring for the horses wounded on the battlefield in France.

Dr. M. Page Smith Dead: We recently learned with regret of the death on July 8, 1914, of Dr. M. Page Smith, of the United States College of Veterinary Surgeons, Washington, D. C., of typhoid fever, at Charleston, S. C.

# ARMY VETERINARY DEPARTMENT.

## MAY CHRISTIANS PRAY FOR HORSES KILLED ON THE BATTLEFIELD?

Strange topics, arising out of the European War, are being discussed in our daily papers and in the monthly magazines. One of these, of interest to veterinarians, is the argument between animal lovers and church authorities as to whether or not it is permissible to pray for animals killed on the battlefield.

The discussion arose from the refusal of Dr. Gore, Bishop of Oxford, to introduce such a prayer into the service of the Anglican Church. He is reported to have given his opinion as follows:

"I cannot sanction for use in the church the litany which contains a prayer for the animals and speaks of them as offering their guileless lives on the battlefield. It has never been the custom of the church to pray for any other things than those we think rational. It is a complete mistake to suppose the orthodox churches would countenance any such prayers."

Not all the world believes this way. There are religions which sanction prayer for animals, as shown by the following note of the year 1905:

"FUNERAL CEREMONIES IN MEMORY OF HORSES KILLED IN THE RUSSO-JAPANESE WAR.

"VICTORIA, B. C., March 25, 1905.—Advices received by the steamer Kanagawa Maru tell more of the monster funeral service held at Miyagi temple for the horses killed during the war. In the presence of the governor and other officials the priests gave a posthumous name to the victims. Offerings were placed on a large altar and a number of Buddhist priests read prayers. The obsequies were the same as those over soldiers. The elder of the Miyagi temple then delivered a memorial address for the dead horses."

*Remarks.*—It is quite tempting to enter into a closer examination and criticism of these opposing beliefs as regards the question involved. We shall refrain from a lengthy dissertation on the subject, from reasons given below, but we feel justified to take a stand as patrons of animals.

Undoubtedly, the opinion expressed by the Bishop of Oxford is authoritative as far as the tenets of the Anglican Church are concerned. Yet, the conception that our domestic animals are "things," or chattels, or slaves, originated in ancient Roman law and not in religion. Most of the ancient religions sanctified some animals. We know from veterinary history that even in the Middle Ages the priests and monks of the Christian church

anointed the forehead of sick animals with a cross, praying for a cure or to ward off animal epidemics. While we no longer countenance such practices officially, the simple folks of many countries still believe in the efficacy of prayer for sick animals, as veterinarians well know. Furthermore, among people of education there are many good Christians who cherish a more pantheistic sentiment, and who feel rather repelled by an austere religious belief that does not recognize a more just and natural relationship of animals toward man, the universe and God, than that cited. We should never forget that, after all, the Creator has builded us on the same lines as the higher animals, which live by and with the same organs as does man.

The Burial of a True and Loved Friend.

While thus a discussion of the subject may be interesting to all those who think or feel one way or another, it can easily be foreseen that it would lead to challenges from ministers of the gospel, philosophers, naturalists and other men and women of science and faith. But such argument could not lead to a general

agreement, because one religious belief may oppose another; religion may clash with metaphysics; comparative psychology with orthodox philosophy; the logic of the schools with ethics of the humane societies.

But the subject has a purely veterinary aspect, one on which we can speak with impunity as veterinary practitioners, without producing heated controversy. It is sometimes our lot to witness the deephearted sorrow of men, the weeping of women and children over their suffering, dying or dead animal pets. On such occasion sincere, good people, under stress of deep emotion, do pray for their animal friends, showing that there are moments in human life when simple, primitive, religious sentiment breaks the bounds of the strict rules and limitations of established churches, and when the human soul seeks its relation to the soul of animals.

We seem to have no records of such "spiritual case reports" of the owners of our animal patients. This is so, because such scenes of sorrow over departing animals are enacted in the privacy of family life, followed by the request to us to observe professional secrecy in order to guard against scoffers. It is to the honor of veterinarians that these requests are never broken. Thus these happenings may remain unknown to the clergy of the Christian churches.

Finally, we may be certain that the dreadful European War has caused many a true prayer to be sent heavenward by God-fearing soldiers, invoking relief or eternal rest for their maimed or killed horses. The cruel and pitiless scenes enacted on the battlefield bring out the glory of this animal. There he shares with us the burden of labor and fatigue, the privations and dangers, and together with us he faces death unflinchingly. He becomes our true comrade at arms, and we cannot help but include him in our humble prayer, should his courageous soul be taken from us by the sword or the bullet. Such is the nobler impulse wrought in the heart of men by the tragedy of war, and it is inconceivable that it should be offensive or forbidden by the Most High.

OLAF SCHWARZKOPF.

## DOCTORS OF THE "BLUE CROSS."

The accompanying photograph shows the newly organized veterinary aid society at work on the French-British battle lines. The young man in the white apron is a veterinarian of the society, the man in uniform appears to be an enlisted man of the British Army Veterinary Corps. This photograph proves how far hu-

mane veterinary organization has progressed abroad on account of the war. Let us hope that the "Blue Cross Society" will

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**Bandaging the Wounds of a Horse in the Equine Hospital at Serqueux. (In the Equine Hospital established by the Blue Cross Society at Serqueux, France, over two hundred horses are under treatment. These horses have all been wounded on the battlefield.)**

prove as good a backing to the Army Veterinary Corps as has the "Red Cross" to the medical departments to all armies, including our own. O. S.

## ARMY VETERINARY NOTES.

One of the U. S. Army Remount Stations reports that the British, at their Lathrop Purchasing Station, are having hundreds of cases of shipping fever despite the fact that they have used the usual vaccination in every case.

## HORSES SUFFER MOST.

ENGLISH WRITER SAYS WAR IS HARD ON ANIMALS.—London, Feb. 8 (Mail correspondence of the Associated Press).—"The horses of the front have disease to face as well as bullets. Efforts are now being made in the western line to check an epidemic of glanders. Only animals free from the disease are admitted to the Blue Cross hospitals, established in France by the English Dumb Friends' League.

"These hospitals have all the work they can handle as it is. Besides the work of mercy, the society saves an unnecessary wastage of horse flesh.

"Roy Horniman, sent on a tour of inspection in France by the Blue Cross Society, describes his impressions of one of the horse hospitals as follows:

"'The first noticeable feature of the hospital was its exquisite cleanliness. The farm buildings used as wards were whitewashed and disinfected. I noticed the same neatness in the pharmacies and the staff looked spick and span in their white uniforms.

"'On entering the first ward something caught my throat. The sight of this line of patient veterans, standing still and silent in the dim light, had something accusing in it. I felt awe as I thought of the ordeal through which these heroes had passed, and I am not ashamed to say that I raised my hat.'

"He reports that the majority of cases are deep and painful saddle cuts, and saber and bullet wounds are in the minority.

"One of the most skillful veterinarians in the hospital is a woman who belongs to a well-known English family, and there are women in the other Blue Cross hospitals as well."

O. S.

# CORRESPONDENCE.

## RAISING THE STANDARD OF ENTRANCE.

Lincoln, Nebraska, March 13, 1915.

AMERICAN VETERINARY REVIEW, *New York, N. Y.:*

After gaining information, as I have, by serving as State Veterinarian of the State of Nebraska, and meeting men who are an asset to the profession, men who have the welfare of our science at heart and, again, meeting men who are so debased as to jeopardize the health of the public at large, as well as the live stock industry, by their unscrupulous methods, I have come to the conclusion that there is only one way to safeguard these veterinarians of a higher standard and that is excluding the other type by raising the entrance into veterinary colleges to a high school diploma, or its equivalent.

I have listened to discussions, pro and con, upon this subject at different State as well as National meetings. I have keenly listened and considered the objections to such a standard. I realize that it would shut out a few men who, no doubt, would make high class veterinarians of whom the profession would never be ashamed. But when we consider how many unscrupulous men it would prevent from creeping into our midst who would be a hindrance to our progress, I have come to the final conclusion that there is nothing left for us to do but set a standard as above mentioned.

The psychological moment is here and if we do not take advantage of the existing opportunity and form the rank and file and start our march upward, there is one thing sure, we will certainly go on the decline.

The American people have never had the value of the veterinary science brought to them more forcibly than during the past year. By this I mean the outbreak of the foot-and-mouth disease that has made its appearance and threatened the destruction of millions upon millions of dollars worth of live stock, as well as being a menace to public health. The efficient and commendable work of the Bureau of Animal Industry, which is composed entirely of veterinarians, as well as our State veterinary forces, has no doubt controlled the spread of this disease. The American

people will be fair enough to place credit where it belongs, and that is to our branch of science.

The idea that veterinarians are simply mechanical instruments to go out and only doctor horses is a thing of the past. It is little that a young graduate realizes what a great task and duty lies before him when he starts out to select a location to practise his chosen profession, provided that he is broad enough to interpret and realize the great benefit that he can be as a protector and an educator in such community, controlling and eradicating, for instance, the one dreaded disease, bovine tuberculosis. The study of the sanitary milk question in his selected locality, no doubt, will mean more toward the preservation of human health than any other one thing that can possibly be imagined by the human mind. Again, there is the subject of hog cholera, which is one of the main issues of the present day, a disease which has destroyed millions of dollars worth of hogs in this country, and a disease, in my opinion, that can be controlled by the practical, scientific use of hog cholera serum. This disease, no doubt, will continue to spread as long as virus is sent indiscriminately to be administered by unskillful hands. If we have veterinarians practising in our different States who have no other interest than the compensation they receive, and do not administer such serum and virus in a more competent and scientific manner than the general layman, can we expect the people as a whole to recognize our valuable services? I daresay that if the standard of entrance is not given more consideration by veterinary colleges of this country in the very near future it will be a greater hindrance to our advancement and uplift than anything else I know.

In this great State of Nebraska we have seven county farm demonstrators. I have found, in going over the State, that the great demand upon these men by the general public is to fight the ravage of hog cholera, which I must admit they have done in a very satisfactory manner. They have not gone out and vaccinated this and that herd without making an inquiry as to the results, but they have visited such farms from time to time, keeping an accurate record, which no doubt will go a long way toward the solution of many problems pertaining to the best measures to adopt in controlling this disease. I have often wondered why these men were so keenly interested and so accurate in keeping data upon herds they had vaccinated. I have finally concluded the reason is that the greater majority of them have been reared on the farm and their fathers are extensive live stock breeders, and for that reason it has stimulated a desired interest

within their hearts to find the ways and means to protect their own home interests.

What a grand thing it would be could we have more high class, better educated men matriculate in our veterinary colleges. Men who would go out and work for the interests of our great live stock industry, as well as the protection of human lives, and not consider the financial gain as the most important factor. I realize a man should be paid well for his services, but a man who renders a beneficial service need not worry, as the demand he creates will likewise stimulate the confidence and a desire on the part of the laity to pay him well for services rendered.

In my opinion, just as long as the veterinary colleges allow some of the lower standard men to enter, just so long will the profession be deprived of a high, elevated, conscientious class of veterinarians. How painful it is to think that we have veterinarians in our profession in the different States who can hardly write their names so that you can read them! How demoralizing and how distasteful it is for our great profession to be imposed upon by men who are destitute of character and all human morals. Is it not possible for a line of distinction to be drawn between the better element of veterinarians and an unscrupulous one who would stoop so low as to allow a dollar to sway his judgement in any direction that a layman might wish to influence?

When a man sits in the State Veterinarian's chair he certainly has the undesirable opportunity of having the aforementioned subjects facing him many times during the twelve months of the year. I certainly hope to see the day that the veterinary department of every State will be divorced from the political ring and that the very highest grade of mankind will act in that official capacity. I do not feel that I am going too far when I say that he will have one of the greatest tasks of his life. If such an honor be conferred upon a man, he should be endowed with principles that would make him realize the importance of his task. A man capable of being State Veterinarian should be advanced to a degree that he would feel within himself what a great injustice he would be imposing upon the live stock industry and the public health of this country if he allowed an unscrupulous veterinarian to make a tuberculin test. This matter was brought to me more forcibly than ever before when I attended the United States Live Stock Sanitary Board meeting, held in Chicago the past week, when I heard a State Veterinarian assert that he had a deputy who absolutely refuses to make a tuberculin test or to vaccinate

hogs, simply because he does not want to be classed as one of the violators and offenders of making unreliable tests and vaccinating hogs merely for the few paltry dollars that he would receive. The thought came to me as I talked, of this honorable, well-meaning, upright veterinarian, that if we only had several more such conscientious deputies in our different States, and rely upon such men as educators, you can readily conclude the magnitude of the victory they would gain in stamping out all infectious diseases.

Every profession has the same thing to contend with, but it does seem to me that there is sufficient strength lying in the hands and power of our best veterinarians to bring an influence to bear upon the veterinary colleges of this country to seek and find a higher grade of men to matriculate in such colleges. I believe, furthermore, that it is our duty as veterinarians as a whole to try to encourage a better class of students to take up our work. By raising the standard to a high school diploma or its equivalent will not make a minor matriculate but as long as an undesirable element is permitted to matriculate, we cannot expect the desired better element to place themselves upon the same plane and to go out and practice and compete with such a class of men. Traveling over the State of Nebraska, as well as other States, nothing has gratified me more than to meet a good appearing, honest, broad-minded veterinarian, one who had kind words for his brother practitioner, one who had kind words for his community and one who had acquaintance with the best element of his town and one who is considered an important factor by the general public. But, on the other hand, when I meet a veterinarian who is cursing the community at large and especially his competitor, it does not take me long to size up such a man, and I soon conclude why the people in certain communities consider the veterinary science such a huge joke. Many times I have felt tempted to try to show them their weakness, but again, when I think of the old saying, "As they are bred so they will trot," it is discouraging to any man to try to bring about a reform.

Right here I wish to emphatically state that this article has not been written insinuating in any way towards the veterinarians of Nebraska as a whole, as no man is in a better position to know the quality of the veterinarians in this State than I. I must admit that every State is imposed upon by a few unscrupulous men, but I do believe if a general investigation were made that the State of Nebraska has as few unscrupulous veterinarians as any State in the Union. I was never more pleasantly surprised than the past winter at our annual meeting when most of the

veterinarians turned out to this meeting, and the day that they filed out of one of our main hotels to go to the Commercial Club and take luncheon, I gazed over them in a state of amazement, and I daresay that no other professional body could have surpassed them in appearance and intelligence.

In conclusion, I must say that I do not feel that men under the standard that I have previously mentioned should be given the opportunity of gaining entrance into our colleges, but should be turned away and sent back home to prepare themselves and obtain sufficient education to be in a position to fit themselves for such professional education.

L. C. KIGIN,
Acting State Veterinarian.

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## CALIFORNIA VETERINARIANS ENTHUSIASTIC OVER A. V. M. A. MEETING.

CHICAGO, March 19, 1915.

*Editor* AMERICAN VETERINARY REVIEW, *New York:*

A letter just received from Dr. Longley states that California veterinarians are enthusiastic over A. V. M. A. meeting. Dr. C. M. Haring, Berkeley, Cal., and Dr. R. A. Archibald are on committee of California veterinarians to make arrangements. They are planning to make the meeting the best ever held. Tell all the REVIEW readers to make plans for this meeting, and enjoy the magnificent trip as well.

Very truly yours,

N. S. MAYO.

NOTE—The above, received just about as we were closing up, was dashed off by Secretary Mayo on a postal card. Its brevity is only exceeded by the enthusiasm which it expresses, not only of the California veterinarians, but of the A. V. M. A. secretary, which, by this time next month, we trust will have infected every member of the profession in North America—[*Editor*].

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## A CIRCULAR LETTER.

MANHATTAN, KANSAS, March 1, 1915.

*Editors* AMERICAN VETERINARY REVIEW, *New York City:*

*Gentlemen*—Enclosed is a circular letter such as was sent to the members of the K. V. M. A. giving a brief outline of the proceedings of the association's last meeting. In addition it should be mentioned that the secretary was instructed to extend the association's invitation to the A. V. M. A. for them to hold

their next meeting at Kansas City or some other suitable city in the Missouri Valley, also that the next place of meeting is Kansas City, Kan., January 4-5, 1916. The subject of taking part in the memorial to the memory of D. E. Salmon was referred to the Secretary for him to correspond with other associations so that we may be able to act intelligently in the matter.

Yours respectfully,

J. H. BURT, Sec.-Treas.

THE LETTER.

"The annual meeting of the Kansas Veterinary Association was held in the council chambers, Topeka, Jan. 5-6.

"With one or two exceptions the program was carried out as printed. The meeting was well attended and was very enthusiastic throughout. Dr. M. Dorset was present and gave us a very good talk on some of the work done by the B. A. I. during 1914, in the control of hog cholera. Thirty-one new members were admitted.

"The business part of the program received considerable attention and the secretary was instructed to send copies of the following resolutions adopted, to the members. The resolutions were as follows:

"(1) Concerning the distribution of hog cholera blood.

"Realizing that there is great danger to the hog industry of the State of Kansas in permitting unqualified persons to inject hogs with hog cholera blood, and

"Whereas, The Kansas Veterinary Medical Association feels that in a measure the control of infectious diseases among the domesticated animals is in the hands of the veterinarian, and believing that the veterinarians are thoroughly familiar with the dangerous character of hog cholera blood; therefore, be it

"Resolved, That it is the sense of this Association that no hog cholera blood shall be injected into swine by any person unless such a person is a licensed veterinarian.

"Moved and seconded that a copy of the above be sent to each of the following: The Governor, the Live Stock Sanitary Commissioner and the State Veterinarian. This has been done."

Report of the Legislative Committee:

"Mr. President and Members of the Kansas Veterinary Medical Association:

"Your committee on legislation, after careful deliberation, beg leave to submit the following suggestions:

"(1) That while there are several changes that may be desirable in our Veterinary Practice Act, we deem it unwise and imprudent to open it up for amendment during the coming session.

"(2) In view of the sentiment which has been created for a veterinarian to fill the office of Live Stock Sanitary Commissioner, we deem it advisable that the section of the Live Stock Sanitary Laws, requiring that a cattleman fill this office, be changed so as to make it possible for a graduate veterinarian, of good repute, proper standing and sufficient residence to be legally appointed."

Yours fraternally,

J. H. BURT.

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VETERINARY BOARD OF VICTORIA—REPORT FOR THE YEAR 1914. This board consists of nine veterinarians, with an office with the Department of Agriculture, Treasury Buildings, Melbourne, and meets the third Thursday in every month. Graduates in veterinary medicine, until they register with this board, can neither make a charge nor receive a fee. The register is carefully compiled and issued each year, and may be obtained from the registrar on the payment of one shilling. Besides the names of registered veterinarians, it contains much valuable information.

ALUMNI ASSOCIATION UNITED STATES COLLEGE OF VETERINARY SURGEONS will hold its annual meeting at the Raleigh Hotel, Washington, D. C., on April 15, 1915. Dr. H. Stanley Gamble, 1329 Gallatin St., N. W., Washington, D. C., is the secretary and can furnish particulars.

WOULD MUCH RATHER DO WITHOUT BREAD AND BUTTER THAN THE REVIEW. Dr. S. H. Gallier, secretary of the Oklahoma Veterinary Medical Association, said in renewing his subscription: "I would much rather do without an extra piece of bread and butter than the REVIEW."

# BIBLIOGRAPHY.

## EMBRYOLOGY.

A LABORATORY MANUAL AND TEXT-BOOK OF EMBRYOLOGY. By Charles W. Prentiss, A.M., Ph.D., Professor of Miscroscopic Anatomy in the Northwestern University Medcal School, Chicago. Octavo of 400 pages with 368 illustrations, many of them in colors. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, $3.75.

This book, which strictly speaking, belongs to the field of human medicine, has drawn extensively upon the field of comparative medicine in its studies of the growth and development of the embryo (the chick and pig figuring prominently in this respect), and is therefore of great interest to the veterinary student. It is divided into twelve chapters, with an average of as many subdivisions to each chapter, in which the whole field of embryology is covered in a clear, comprehensive manner, greatly augmented by the large number of excellent illustrations. The veterinary student or practitioner who reads *Prentiss's Laboratory Manual and Text-Book of Embryology* will gain much insight in the study of an important branch of comparative medicine, and acquire valuable knowledge on the subject of embryology. The author has been most painstaking in the preparation, presentation and illustration of his subject; and the publishers have exercised their usual good taste in producing a volume that any professional man can feel proud to add to his library.

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W. G. B. DICKINSON, DEAD: We learn with much regret, from our esteemed friend, Dr. Benj. D. Pierce, of Springfield, Mass., of the death of his college chum and life-time friend, W. G. B. Dickinson, F. R. C. V. S., of Boston, Lincolnshire, England. Dr. Dickinson had been a reader of the REVIEW for the past 13 years.

HAS READ THE REVIEW FOR THIRTY-ONE YEARS AND STILL PRAISES IT: In renewing his subscription, Dr. G. W. Butler, of Indianapolis, says: "The REVIEW has been coming to me for nearly 31 years, and I have no intention of stopping it as long as I am able to read and it is kept up to its present and past high standard."

## OBITUARY.

### OSCAR L. McMAHON, M.D.V.

Dr. Oscar L. McMahon, died at his home in Columbia, Tennessee, on March 3, 1915, at the age of 38 years. Born and reared at Spring Hill, Tennessee, on reaching manhood he entered the McKillip Veterinary College, Chicago, to fit himself for the profession that he had chosen to be his life work. He graduated from that institution twelve years ago, and immediately commenced to practise his profession in Columbia. Being especially well qualified for his work, he was very successful, and his splendid, upright, honorable methods won him hosts of friends. In the veterinary organizations of his State he became active from the beginning, and occupied the various offices in the same. He was also assistant State veterinarian under Dr. George R. White. Aside from his interest in all matters pertaining to his profession, he took an active interest in the affairs of his city and State, and was a member of the board of aldermen of Columbia at the time of his death. At the funeral, the mayor and board of aldermen acted as honorary pallbearers, while his professional associates were the active pallbearers as follows: Dr. George R. White, State Veterinarian; Dr. C. E. Kord, Assistant State Veterinarian; Dr. O'Connor, of the U. S. B. A. I. service; Dr. Willis, of the U. S. B. A. I. service; Dr. Brown, of Fayetteville; and Dr. Andrade, of Huntsville. Dr. McMahon's death, which followed a week's illness from pneumonia, was a great shock to the people, not only of Columbia, and of Maury county, amongst whom he lived, but more or less to the entire State. He is survived by a widow, a young son and daughter, his mother, a sister, and his brother, Dr. Jas. McMahon, who was his partner.

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MASSACHUSETTS BOARD OF REGISTRATION IN VETERINARY MEDICINE will hold its annual examination of two days on June 30th and July 1st (Wednesday and Thursday), 1915. For particulars address Dr. E. W. Babson, secretary, Gloucester, Mass.

# SOCIETY MEETINGS.

## AMERICAN VETERINARY MEDICAL ASSOCIATION

### At Oakland, Week Beginning August 30, Recommended by Local Committee.

The following letter from the chairman of the California Committee on A. V. M. A. Affairs, under date of March 18, to Dr. Cary, Chairman of the Executive Committee of the A. V. M. A., is self-explanatory:

"*Dear Dr. Cary:* Confirming my recent telegram I would state that the California Committee recommends that your Executive Committee select Oakland, Calif., as a meeting place, meetings to be held during the week beginning August 30. The reason for advising this is that at that particular time of the year better accommodations can be obtained at the Hotel Oakland than in any of the hotels in San Francisco. It also has the advantage of being a quieter meeting place, while on the other hand it is just as accessible to the Exposition, as ferries run direct from Oakland to the Exposition grounds. The Committee on Local Arrangements which has been appointed by the California State Veterinary Medical Association has selected me Chairman, and we would appreciate it if you would inform us at as early a date as possible as to the decision of your Committee, as it is desirable to close the tentative reservations which we have made immediately."

### Special Train from Chicago.

The advantages of a special train need no argument to A. V. M. A. members; especially on so long and picturesque a trip as that to the Pacific coast. Many of them cherish pleasant memories of the trip of 1910, and all others are anxious for a similar experience, so we will, without further elaboration, attach a letter addressed to Secretary Mayo, from the Chicago and Northwestern Railway, under date of March 19, presenting some most attractive suggestions.

"Dr. Mayo, Chicago, Illinois:

"*Dear Sir*—Referring to our recent conversation regarding your Convention at San Francisco, California, this year:

"For a party of one hundred and twenty-five or more people we will be pleased to run a special train, leaving Chicago at whatever hour will be most convenient.

"*Equipment.*—This train will be made up of electric lighted equipment of the highest character available, consisting of buffet-library-smoking car, open section and compartment-drawing room sleepers, diner, observation car and if desired tourist sleeping cars. The buffet car will be provided with a complete stock of liquid refreshments, cigars, etc.

"*Meals.*—A diner will be provided, furnishing either *à la carte* or *table d'hôte* meals (breakfast 75c., luncheon 75c., and dinner $1, or if you desire, more elaborate meals may be arranged for on a basis to suit your requirements). Special menu cards with the insignia and name of your Society will be prepared.

"*Baggage.*—A baggage car will be furnished for storage of supplies and baggage, to which access can be had at any time en-route. Special baggage tags will be prepared so that each individual can attach same to his baggage for convenient identification.

"*Personally Conducted.*—An experienced representative of the lines over which you travel, will accompany your train to see that all details are carried out to your entire satisfaction.

"*Itinerary.*—An attractive booklet for distribution among your members, containing all information, as to your special train, giving rates, side trips, hotel, meals, and descriptive information regarding the route traveled, scenic attractions, etc., will be prepared.

"*Rates.*—The following rates have been named for the season of 1915—tickets on sale March 1 to November 30—good returning within 90 days, but not later than December 31, 1915. These rates apply to San Francisco, Los Angeles and San Diego:

| | | | |
|---|---|---|---|
| Chicago | $62.50 | Washington | $92.30 |
| New York | 94.30 | Omaha | 50.00 |
| Philadelphia | 92.95 | St. Paul or Minneapolis | 63.85 |
| Pittsburgh | 81.20 | | |

going via any direct route and returning via a diverse route if desired.

"Those who desire to go one way via Portland, Seattle and the Northern routes, may do so at an additional charge of $17.50 over the rates named above.

"*Sleeping Car Rates.*—The sleeping car rates from Chicago

to San Francisco, Los Angeles or San Diego, with ordinary stop-overs, are as follows:

| | |
|---|---|
| Lower double berth in standard Pullman sleeper..... | $13.00 |
| Upper double berth in standard Pullman sleeper..... | 10.40 |
| Compartment ..... | 36.50 |
| Drawing room ..... | 46.00 |
| Lower double berth in Tourist sleeper..... | 7.00 |
| Upper double berth in Tourist sleeper..... | 5.60 |

ABBOTT LABORATORIES LIBRARY CHICAGO

"We desire to call your attention to the following special features of the North Western—Union Pacific—Southern Pacific Route:

"*Double Track.*—By the time the Exposition is opened the C. & N. W.—U. P.—S. P. Route will be double tracked from Chicago to San Francisco, one advantage no other line can offer—and which should be considered where safety as well as speed is an object.

"*Electric Block Safety Signals.*—Every inch of the route is protected by the *Automatic Electric Block Safety Signal System.* This system should not be classed with the ordinary Manual Block System in operation on other lines.

"*Roadbed.*—The entire roadbed is ballasted with crushed rock and Sherman gravel, making the smoothest roadbed in the world.

"*New Passenger Terminal.*—The new Passenger Terminal of the Chicago & North Western Railway, Canal and Madison streets, Chicago, is the most modern and up-to-date railway station in the world.

"With the above special features, we will be able to handle the large volume of traffic expected on account of the Panama-Pacific International Exposition, with the least possible delay and with the maximum of safety, comfort and speed.

"Should your party not be of sufficient number to warrant a special train, we have three daily trains to the Pacific Coast, on which we can place extra Pullman sleepers, arrange for convenient stop-overs, etc., for the accommodation of your party.

"We are submitting herewith some tentative schedules for your consideration. As it is impossible to cover by letter all the details of such a trip as you contemplate, our representative will be in readiness to meet with yourself and Committee at any time desired, go farther into details and answer all questions, and when the route and stop-overs are decided upon, we can furnish a complete schedule.

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"In conclusion permit us to assure you that in the event you honor us by the selection of our Line, every effort will be put forth to insure your comfort and satisfaction and to maintain our standard "*The Best of Everything*" and so that no criticism can be passed on your Committee by the selection of the Chicago & North Western Line.

"Yours very truly,
"(Signed) H. A. GROSS,
"G. A. P. D"

## Route No. 1.

VIA C. & N. W. RY.—UNION PACIFIC—SOUTHERN PACIFIC.

| | | |
|---|---|---|
| Lv. Chicago, C. & N. W. Ry. Co | | 8:00 P. M. |
| Ar. Omaha, C. & N. W. Ry. Co | | 8:30 A. M. |
| Lv. Omaha, Union Pacific | | 8:45 A. M. |
| Ar. Ogden, Union Pacific | (Mountain Time) | 2:00 P. M. |
| Lv. Ogden, Southern Pacific | (Pacific Time) | 1:30 P. M. |
| Ar. San Francisco, Southern Pacific (3d day) | | 4:00 P. M. |

## Route No. 2.

VIA C. & N. W. RY.—UNION PACIFIC—SOUTHERN PACIFIC. (SIDE TRIP LAKE TAHOE.)

| | | |
|---|---|---|
| Lv. Chicago, C. & N. W. Ry | | 7:00 P. M. |
| Ar. Omaha, C. & N. W. Ry | | 8:00 A. M. |
| Lv. Omaha, Union Pacific | | 8:15 A. M. |
| Ar. Ogden, Union Pacific | (Mountain Time) | 12:00 noon. |
| Lv. Ogden, Southern Pacific | (Pacific Time) | 11:30 A. M. |
| Ar. Truckee, Southern Pacific | | 6:00 A. M. |
| Lv. Truckee, Lake Tahoe Nav. & Trans. Co | | 6:30 A. M. |
| Ar. Lake Tahoe, Lake Tahoe Nav. & Trans. Co | | 7:30 A. M. |
| Lv. Lake Tahoe, Lake Tahoe Nav. & Trans. Co | | 8:00 P. M. |
| Ar. Truckee, Lake Tahoe Nav. & Trans. Co | | 9:00 P. M. |
| Lv. Truckee, Southern Pacific | | 9:30 P. M. |
| Ar. San Francisco, Southern Pacific | | 8:00 A. M. |

## Route No. 3.

VIA C. & N. W. RY.—UNION PACIFIC—SOUTHERN PACIFIC. (SIDE TRIP SALT LAKE CITY.)

| | | |
|---|---|---|
| Lv. Chicago, C. & N. W. Ry | | 4:30 P. M. |
| Ar. Omaha, C. & N. W. Ry | | 5:00 A. M. |
| Lv. Omaha, Union Pacific | | 5:15 A. M. |
| Ar. Ogden, Union Pacific | | 9:45 A. M. |
| *Lv. Ogden, Oregon Short Line | | 10:00 A. M. |
| *Ar. Salt Lake City, Oregon Short Line | | 11:00 A. M. |
| Lv. Salt Lake City, Oregon Short Line | | 5:00 P. M. |
| Ar. Ogden, Oregon Short Line | (Mountain Time) | 6:00 P. M. |
| Lv. Ogden, Southern Pacific | (Pacific Time) | 5:30 P. M. |
| Ar. San Francisco, Southern Pacific | | 9:00 P. M. |

Note—Trains arrive at Oakland 30 minutes earlier.

* Mormon Tabernacle organ recital and trip to Salt Air Beach.

## UNITED STATES LIVE STOCK SANITARY ASSOCIATION.

The 18th annual meeting of the United States Live Stock Sanitary Association convened in the red room of the La Salle Hotel at Chicago, Ill., on February 16, 1915.

The meeting was called to order by Vice-President Haring owing to the fact that President Ward and several western members had been delayed enroute.

On motion the meeting was adjourned until 1 p. m. when Dr. Ward then declared the meeting formally opened.

Dr. Joseph Hughes of Chicago welcomed the association and after referring to the cause that necessitated the meeting being held at such a late date, he bade us good welcome to Chicago, which he styled as an ideal place for a meeting of this character.

Dr. Haring of California responded and pointed out the responsible position in which the veterinary profession stood at this particular time and predicted that our future usefulness stood now before the " bar of justice."

The preliminary customs being carried out, the President then presented his address, taking as a theme the history and work of the association. He referred to the many subjects covered by the association as a whole, making special reference to the control and eradication of some of the serious animal plagues, such as " Southern cattle fever " and " Tuberculosis," laying particular stress on the necessity of preventing the introduction of diseased cattle into our respective States; particularly such States that are comparatively free from certain maladies, and appealing to the State authorities for special protection in guarding the pure bred herds of our country. He vigorously condemned nostrums, and so-called cures for communicable diseases, pointing out the injustice and harm done innocent stockmen by these frauds. He gave as his opinion that no virus should be allowed to be sold in the United States that is not directly under State or Federal supervision.

Following the President's address the report of the Secretary-Treasurer was presented as follows:

### Report Secretary-Treasurer.

April 28, 1914, the Secretary wired all members of the Executive Committee of this Association suggesting a Special Meeting of the Committee to consider the drafting of recommendations

addressed to the Governor of each State recommending immediate action by State authorities for State Control of Anti-Hog Cholera Serum Laboratories operating with the various States without a Federal license.

May 6 Committee met at Chicago, all members represented either in person or by proxy. The following recommendations were drafted and the Secretary instructed by Resolution to forward a copy to the Governor of each State, which was done. Favorable acknowledgments were received from 37 Governors and prompt action taken by several States.

As you already have received this information by Bulletin it is presented here merely for the purpose of having it read into the proceedings for permanent record.

### Press Bulletin "Suggestions for the Control and Prevention of Hog Cholera."

The Executive Committee May 6 by Resolution asked President Ward to prepare a special bulletin along above lines. Bulletin was duly prepared by Dr. Ward and distributed to Live Stock and Farm papers and all members August 10, 1914.

The Bulletin is herewith presented to be read into the proceedings for record.

### Foot-and-Mouth Disease in the United States.

As soon as the outbreak which developed last Autumn became serious your Secretary planned to issue each week bulletins summarizing the Control situation in the various Live Stock States. It soon developed that through pressure of work or indifference most of the officials in charge would not furnish information with sufficient promptness to permit issuing bulletins with any regularity. Up to the present Special Bulletins on epidemic have been issued as follows:

October 30, 1914.
November 13, 1914.
January 13, 1915.

These bulletins were taken as official by Live Stock and Country papers and we believe had a good influence in combating sensational reports over the country.

### Co-operation with Chicago Medical Society.

Supplementing favorable action by this Association December 4, 1913, your Secretary has worked with Executive of the

Chicago Medical Society and arranged for a Joint Program for One Session of this Meeting. I trust this action will be followed up by our members in their several locations and lead to a better understanding between State and Municipal Health Officials who are in so many cases interested in many of the problems with which members of this Association deal in their official capacity.

### Official Delegates to the International Veterinary Congress, London, August 3-8, 1914.

In pursuance of Resolution duly made by this Association at our last meeting Credentials were issued to Dr. S. H. Ward, and Credentials in blank to two others to be nominated by Dr. Ward on his arrival at London.

### Official Delegates to American National Live Stock Association Meeting Denver, Colorado, January 20-22, 1914.

In pursuance of Resolution of this Association Credentials were issued to Dr. B. D. Davis, Wyoming, Mr. W. H. Waddell, Texas, and J. J. Ferguson, Chicago. A splendid relation was established between this Association and your Association as indicated in separate report. The co-operation of the American National Live Stock Association can easily be made a strong factor in directing desirable legislation in the various States and at Washington.

### Seventeenth Annual Report.

Work of editing this Report involving much detail was handled in an exceptional manner by Dr. B. H. Ransom, Washington, D. C. 1,000 copies were printed and 800 distributed. The report received favorable notice from a large number of Farm and Live Stock papers, many articles being reproduced by them.

### Special Bulletins Since Our Last Meeting.

3,500 bulletins have been published and practically all distributed.

### Suggestions for Increasing Usefulness of the Secretary's Office.

1. Reporting by members of unusual matters of interest occurring within their States. If of sufficient general interest will be reported by this Office in bulletin form to members and the press.

2. A more general and prompt response on the part of members to requests, for certain specific information.

3. Better co-operation on the part of old members in securing applications for membership.

### General Information.

During the year we received and answered an unusually large number of letters from State and Municipal officials regarding proposed legislation or legislation and regulations already in effect in other States. We have reason to believe this feature of the Association work has become very helpful and valuable.

### Membership.

On February 10 this Association had 228 members and 19 applications; total, 247. An increase over 1913, 74 members.

### Report of the Treasurer.

I beg to submit herewith my report as Treasurer from November 30, 1913, to February 10, 1915.

*Receipts.*

| | | |
|---|---|---|
| Balance on hand November 30, 1913 | | $798.83 |
| Membership dues 1911-12 | $1.00 | |
| Membership dues 1912-13 | 13.00 | |
| Membership dues 1913-14 | 206.00 | |
| Membership dues 1914-15 | 12.00 | |
| Twelfth Annual Reports | 5.00 | |
| Thirteenth Annual Reports | 9.00 | |
| Fourteenth Annual Reports | 5.00 | |
| Fifteenth Annual Reports | 5.00 | |
| Sixteenth Annual Reports | 13.00 | |
| Seventeenth Annual Reports | 620.20 | |
| Cuts and express on cuts for N. Y. Veterinary College | 5.60 | |
| Interest on deposit | 13.36 | |
| | | 908.16 |
| | | $1,706.99 |
| Bills receivable from program advertising | | 480.00 |
| | | $2,186.99 |

*Expenses.*

| | |
|---|---|
| Office expense, printing circulars, stationery, postage, exchange, per vouchers attached | 972.14 |
| Balance on hand February 10, 1915 | $1,214.85 |

All of which is respectfully submitted.

For the Committee on Legislation Doctor Reynolds stated that there was no formal report prepared but he wished again to call the Association's attention to past recommendation of Federal and Dominion registration of tuberculous free herds.

The preliminary work of the program being completed, a very important paper prepared by Doctors Melvin and Mohler was read by Doctor Mohler. Owing to the great importance of this paper in giving data and explanation of the latest outbreak of Apthous Fever, we take pleasure in quoting the paper in full.

## Foot-and-Mouth Disease.

By A. D. Melvin and J. R. Mohler, Washington, D. C.

Like a bomb from an aeroplane the 1914 outbreak of foot-and-mouth disease was precipitated upon the live stock industry of the United States with almost an explosion-like effect. How it was introduced, or whence it came remains as deep a mystery to-day as at the beginning of the outbreak, although many suggestive clues have been thoroughly investigated and disproved. Theory after theory has been exploded, and there remain but two lines of investigation to be completed before we exhaust all evidence at present available relative to the introduction of the disease.

It would be useless to go into the history of these negative investigations, but suffice it to say that the Department has traced the possible origin of the disease all the way from imported biological serums and antitoxins to irresponsible stories which indicated that infection had been accidentally brought to this country by Belgium refugees in the vicinity of Niles, or had been intentionally disseminated by men equipped with hypodermic syringes, hoping to interfere with the exportation of meat to the warring countries in Europe.

It seems probable that the first appearance of the disease in this outbreak was among the hogs of a farmer living two miles west of Niles, Michigan, about the middle of August, 1914. These hogs had never been vaccinated for hog cholera, nor fed on milk from any creamery, as the owner separated the milk from his own cows on the premises.

Three possibilities as to the method of their infection have been developed. The first is in connection with the return of the farmer's wife from a visit to New Orleans where her granddaughter had been recently vaccinated against smallpox. This possibility is rather remote, but is nevertheless under investigation at present.

The second is in connection with the purchase by the farmer of merchandise from a Chicago firm, including two pairs of lisle gloves imported from Germany. The paper used in packing and wrapping these goods was thrown into the hog lot about ten days before the hogs began to show the disease which subsequently proved to be foot-and-mouth disease.

The third possibility is in connection with the stealing of chickens from the farm a short time before the appearance of the affection among the hogs. The farmer suspected that the chickens were stolen by foreigners employed in a neighboring tannery, though he has no evidence upon which to base this suspicion. He thought that possibly the disease may have been brought to his premises by one of these suspected men, who might have become contaminated with the virus from some imported article used in the tannery. Diligent inquiry has been made at this tannery, and it is evident that imported hides cannot be even remotely incriminated, as the last importation was made more than eighteen months before the outbreak.

The plausibility of the above suggestion, however, lies in the fact that certain tanning materials are imported in large quantities monthly from Argentine and Japan, where foot-and-mouth disease constantly prevails. These products are brought into the tannery covered with matting or small burlap bags, which articles are frequently taken home by the tannery employees for household purposes. Our investigations along this line are still in progress, but thus far without definite results.

Within two weeks after the first hogs became sick, the disease spread to the cattle on the premises, and simultaneously the cattle belonging to a neighbor developed peculiar symptoms. Each of the farmers called in a different local practitioner, one of whom several days later notified the State authorities of the conditions present, and requested assistance. The first information that reached Washington was a telegram from an assistant inspector at Detroit on September 3, stating he intended to visit Niles, Michigan, to investigate a possible outbreak of apthous fever at the request of the State Veterinarian. The following day a telegram was received stating that no foot-and-mouth disease in Niles, Michigan. Characteristic lesions of necrotic stomatitis present. On September 4 a letter confirming the telegram was sent to Washington, which contained a very good description of the retrogressive character of the pathological lesions in the two herds of cattle, but this description could be applied to a number of conditions in no way related to foot-and-mouth

disease. It was stated that the ulcers had been replaced by new tissue, and the external ulcers about the lips and feet exhibited the scab formation characteristic of lip-and-leg ulceration with new epithelium replacing the granulating surfaces. Not a suspicion was incorporated in either telegram or letter. Had more attention been given to the history of the disease, and less consideration given to pathological phraseology, or had the statements been made of existing conditions to the effect that 50 of the 50 cows in one herd, and 20 of 21 cattle in the other herd were affected with these peculiar lesions, some suggestion of the character of the infection would have been implied.

Nothing further was heard from the disease in Michigan until the afternoon of October 10, when a letter arrived from the inspector in charge of the Detroit force, to the effect that the disease had spread during the interval from the original two herds to six additional herds in the neighborhood. While this letter contained reasons why the lesions resembled foot-and-mouth disease, and other reasons why they did not, nevertheless the history of the various herds was so completely described that no affection other than foot-and-mouth disease could suggest itself. Therefore, Dr. Eichhorn was sent on the next train to investigate and report. The three specimens from the lesions of the affected animals, forwarded in glycerine, were turned over to Dr. Mohler, who immediately proceeded to the experiment station at Bethesda, Maryland, and that evening inoculated three calves, each receiving an intravenous injection, as well as inoculation of the dental pad. On October 12, Dr. Eichhorn wired: "Clinical diagnosis positive. Advisable Mohler leave to-night via Buffalo directly to Niles." The following reply was sent by Dr. Melvin: "Calves inoculated with Schaffter specimens being closely observed by Mohler. If don't develop symptoms next forty-eight hours Mohler will leave for Niles. You should inoculate calf to confirm diagnosis." On the same date, October 12, the state veterinarian of Michigan was sent the following telegram: "Advisable that farms where animals now show symptoms of foot-and-mouth disease be placed in temporary quarantine until time for experiments on other animals." As inoculated calves showed no lesions within the forty-eight hours mentioned, Dr. Mohler was directed to proceed to Niles to confirm the diagnosis, and took with him Dr. Houck who was to be left in charge of the eradication work, as well as Drs. Gallagher and Smith of Washington. They arrived at Niles at 6.30 p. m. on October 15, and immediately were piloted by Dr. Eichhorn in an automobile to see some of the

infected animals. By means of a pocket flashlight, the lesions of the natural cases, as well as the calf which Dr. Eichhorn had inoculated in the meantime were examined, and the following night-telegram was immediately sent by Mohler to Washington: "Lesions of inoculated calf slight but typical. Examined to-night number infected cattle. Indisputably European disease. Reports just received indicate 39 Michigan farms infected. Seven in Indiana. Need fifteen additional men." Thus the campaign of eradication was launched.

That the glycerinated specimens were reduced in virulence was evident by the results of inoculation at Washington, for while the Eichhorn calf with only a scarified dental pad developed lesions of the disease in three days, the infection in the first Washington calf had a period of incubation of seven days, the second case nine days, while the third calf never developed any symptoms whatsoever. In this connection, it should be remembered that the intravenous inoculation of foot-and-mouth disease virus is supposed to be the most rapid and certain method of inoculation with a period of incubation of from six hours to five days. The virus of the disease at the beginning was evidently low in virulence, and the dissemination of the infection was consequently very slow as indicated by the small number of herds to which the disease had spread from August to October.

During the forty-eight hours following the confirmation of the diagnosis, much scouting was done to ascertain approximately the boundaries of the infection, and as a result the Secretary of Agriculture issued an order on October 19 quarantining Berrien and Cass counties, Michigan, and Laporte and St. Joseph counties, Indiana. In the meantime, the co-operation with the State authorities was effected, and measures instituted for tracing, checking and stamping out the disease. While the quarantined territory was believed at first to circumscribe the centers of infection in that section, the disquieting information was disclosed that a mixed shipment containing 28 hogs, 3 cows and 54 sheep had been sent on October 6 from the vicinity of Niles to Chicago. Almost simultaneously it was discovered that the milk from an infected herd had been taken to a creamery daily for the previous two weeks, and the return of the infected skimmed milk to the patrons of this creamery resulted in the rapid spread and almost spontaneous appearance of the disease on thirty-six farms, which number increased to over one hundred before the creamery could be closed. The hogs in the Chicago shipment were among the first to receive this contaminated skimmed milk, and their ship-

ment to Chicago before the development of the disease probably infected the cows and sheep in the car as well as the Union Stock Yards of Chicago. From this point infection was carried by various shipments of live stock, especially the classes of cattle known as stockers and feeders from the Chicago stock yards to various parts of the country north, east, south and west.

About this time the products of a certain hog cholera serum company in Chicago became infected with the virus of foot-and-mouth disease. A careful investigation developed the fact that no serum shipped out from the plant of this company was contaminated with foot-and-mouth disease. One lot of virus, however, was so contaminated. This lot of virus was comparatively small, it being composed of 3,400 c.c. of blood obtained from four pigs. These pigs were not purchased sick in the stock yards, but were well at the time they entered the establishment on October 16. They were then inoculated with hog cholera virus with the intention of using their blood in connection with administering the serum-simultaneous treatment. On October 26 these hogs were killed to furnish hog cholera virus.

The lesions found in these four pigs were only those of acute hog cholera, but evidently they were also in the incubative stage of foot-and-mouth disease. It is a well-known fact that the virus of foot-and-mouth disease is present in the blood only in diluted quantities and then only at the beginning of the fever, before the vesicular eruptions appear. The blood will carry the virus of foot-and-mouth disease without possibility of detection except by animal inoculations, when the hogs are killed at this stage. The blood from these pigs was mixed and most of it was shipped out to customers of the concern in Ohio, Indiana, Illinois and Iowa. On November 3, the inspector in charge of the plant had his suspicions aroused by sickness appearing in certain hyperimmunized hogs. This was late in the day and he visited the plant at daylight on November 4. He immediately quarantined the plant for foot-and-mouth disease, because the hogs noticed sick the evening before were worse and showed lesions of foot-and-mouth disease. All of the employees and the entire establishment were disinfected, and the plant still remains under quarantine. The infection of the plant was due either to the promiscuous passing of the owners and employees of the company to and from the infected Chicago stock yards, or to the purchase of hogs exposed in those yards.

The disease has so far been found in the following twenty states, namely: Connecticut, Delaware, Indiana, Iowa, Illinois,

Kansas, Kentucky, Maryland, Massachusetts, Michigan, Montana, New Jersey, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Virginia, Washington and Wisconsin; in addition two herds were found infected in the District of Columbia. The Secretary of Agriculture has quarantined all or portions of each of these states, and local quarantines have been imposed by the State authorities.

As an illustration of the manner in which the disease was disseminated, it may be interesting to refer to the feeders which went from Chicago to Montana, a very unusual occurrence, and were held up at Glendive, Montana, on account of showing symptoms of foot-and-mouth disease. These cattle had passed through several public stock yards enroute, and before it was known that they had become infected, a shipment of dairy cattle from clean territory in Wisconsin was unloaded for feed, rest and water in the contaminated yards. When the dairy cattle reached Spokane, Washington, the disease manifested itself, and the cows as well as the pens where they were yarded were cremated without giving rise to any secondary centers of infection.

Since the reinfection of the Chicago yards during the middle of January, another consignment of twenty-six dairy cows from clean farms and free territory in Wisconsin has likewise carried infection to a distant point, but this time the state infected was Kansas. These cows were held outside the Chicago stock yards for thirty-four hours owing to the failure of the owner to request a health certificate from Dr. Eliason. While the mails were carrying the correspondence to and fro, the owner of the cattle visited the Union Stock Yards, and evidently carried the virus back to his Holstein cows. When they arrived at their destination the herd was divided and placed on two farms. About eight days later symptoms of foot-and-mouth disease developed, causing four counties in Kansas to be placed under quarantine as recently as February 1.

Instances of this nature showing the intensely infectious character of the disease could be recorded indefinitely, but this feature will probably be dwelt upon by some of the other speakers this afternoon.

The first three outbreaks, in 1870 in western Massachusetts and eastern New York, about 1880 in several lots of imported animals, and in 1884 in the vicinity of the quarantine station at Portland, Maine, were comparatively insignificant; those in 1902 and 1908 were more grave; while the present infection is by far the most serious and extensive of all.

The type of the disease in 1870 appears to have been quite mild, which, together with the restricted movement of both live stock and persons which obtained at that time, accounts for its failure to become more disseminated.

The other outbreaks in the '80s were likewise mild, and restricted to only a few herds, so that the dissemination of the virus was quite easily controlled.

In the 1902 outbreak, cases were found on 205 premises in twelve counties of four states, while in the 1908 outbreak the infection was located on 157 premises, distributed over a much larger territory comprising twenty-three counties in four states. However, a larger number of animals were slaughtered during the former outbreak, namely, 4,461 against 3,636 in 1908. This latter outbreak was also a much greater menace to the live stock interests of the country, as it reached as far west as Michigan, and came closer to the great stock-raising region. The present outbreak has reached this region, and native range cattle have contracted the disease in Montana, but fortunately only three known infected herds now exist west of the Mississippi River.

The vastness of the prevailing outbreak as compared to other visitations may be realized from the following table, which shows that already 2,245 premises have become infected in 223 counties of twenty states and the District of Columbia. These figures mean little, except by comparison, and for this reason it is thought desirable to show the proportion of infected farms and infected live stock to the total number of farms and live stock in one of the most extensively infected states. For purposes of illustration, it may be stated that in Illinois 19,630 cattle out of approximately 2,233,000 cattle have become infected, 24,165 hogs out of probably 4,350,000 hogs, and but 535 sheep out of a total of 935,000 sheep. Of the 150,000 farms in that state, only 568 have been involved. Thus far the number of cattle destroyed in all the states is 32,914, which is less than .08 of 1 per cent. of the total number in the United States. In other words, the number of cattle destroyed does not exceed the number killed in two or three days in some of the larger packing-house centers.

An analogy may be shown between these last three outbreaks. They all started about August or September, with intervals of six years. They were not uncovered in the 1902 or 1908 outbreak until November. In this present visitation the disease was diagnosed about the middle of October, a month earlier than in the two previous outbreaks. The success which followed the eradication of the disease in these two latter outbreaks through

slaughter of infected herds, enforcement of rigid quarantine measures, and the prompt and thorough cleaning and disinfection of the infected premises in co-operation with the state authorities, has been generally recognized as the most practical and efficient means of eradication that could be adopted in this country, and such measures have been employed successfully in Denmark, Norway, Sweden, Holland, England and other European countries, as well as Australia. Even in Germany this course was followed for a time in a recent outbreak, but the spread of the disease was so rapid—possibly because of its former wide-

STATEMENT SHOWING PROGRESS OF WORK OF ERADICATION OF FOOT-AND-MOUTH DISEASE, FEBRUARY 9, 1915.

| State | No. of counties in entire State.* | No. of counties infected. | No. of herds infected. | No. of cattle infected. | No. of sheep infected. | No. of swine infected. | No. of goats infected. | Total No. of animals infected. | No. of herds awaiting slaughter. | No. of premises to be disinfected. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Connecticut | 8 | 2 | 24 | 538 | 0 | 105 | 0 | 643 | 0 | 0 | Completed. |
| Delaware | 3 | 1 | 12 | 152 | 22 | 49 | 0 | 235 | 0 | 0 | Do. |
| Dist. of Columbia | .. | .. | 2 | 23 | 0 | 5 | 0 | 28 | 0 | 0 | Do. |
| Illinois | 102 | 51 | 568 | 19,630 | 535 | 24,165 | 12 | 44,342 | 25 | 60 | See footnote. |
| Indiana | 92 | 19 | 104 | 2,354 | 636 | 3,855 | 0 | 6,804 | 0 | 3 | |
| Iowa | 90 | 6 | 39 | 1,313 | 32 | 2,057 | 0 | 3,402 | 5 | 6 | |
| Kansas | .. | 2 | 3 | 48 | 0 | 0 | 0 | 48 | 0 | 6 | |
| Kentucky | 110 | 9 | 46 | 819 | 0 | 308 | 0 | 1,127 | 0 | 0 | |
| Maryland | 21 | 10 | 39 | 744 | 197 | 531 | 0 | 1,472 | 0 | 0 | Nearly completed. |
| Massachusetts | 14 | 9 | 58 | 1,235 | 61 | 3,471 | 4 | 4,771 | 0 | 3 | Two new herds. |
| Michigan | 82 | 16 | 240 | 2,942 | 829 | 4,019 | 0 | 7,790 | 0 | 0 | Nearly completed. |
| Montana | 31 | 3 | 32 | 1,408 | 237 | 11 | 0 | 1,656 | 0 | 0 | Completed. |
| New Hampshire | 10 | 1 | 3 | 78 | 0 | 26 | 0 | 104 | 0 | 0 | Disinfection completed. |
| New Jersey | 21 | 6 | 25 | 791 | 6 | 193 | 0 | 990 | 0 | 1 | Nearly Completed. |
| New York | 61 | 12 | 86 | 3570 | 60 | 267 | 2 | 3,924 | 0 | 1 | Do. |
| Ohio | 88 | 23 | 183 | 3,293 | 2,648 | 4,562 | 1 | 10,504 | 0 | 0 | Do. |
| Pennsylvania | 67 | 28 | 703 | 11,575 | 273 | 6,637 | 3 | 18,488 | 2 | 4 | See footnote. |
| Rhode Island | 5 | 3 | 40 | 828 | 1 | 135 | 0 | 964 | 0 | 2 | Nearly completed. |
| Virginia | 100 | 1 | 1 | 19 | 0 | 15 | 0 | 34 | 0 | 0 | Completed. |
| Washington | 38 | 1 | 1 | 102 | 0 | 0 | 0 | 102 | 0 | 0 | Do. |
| Wisconsin | 71 | 10 | 36 | 1,352 | 1,764 | 1,323 | 1 | 4,440 | 0 | 0 | Disinfection completed. |
| Totals | .. | 223 | 2,245 | 52,914 | 7,301 | 51,734 | 23 | 111,868 | 37 | 83 | |

*Number of counties in each State given in order to show approximate area of State involved.

Illinois—All premises where herds have been slaughtered have either been disinfected or are being disinfected. Animals of herds awaiting slaughter not included in total number of animals, as reports on herds awaiting slaughter are not complete.

Pennsylvania—Work of disinfection started as soon as slaughtered animals are buried. Few new herds.

spread appearance in that country—that it soon got beyond the control of the authorities and the slaughter of the infected herds had to be abandoned. The experience gained in those countries where foot-and-mouth disease has become so prevalent and permanently implanted has shown that the existence of such an intensely contagious malady in a country is a constant menace to the live stock industry, and its control solely by quarantine measures and disinfection has proved impossible in those countries where it has been undertaken.

In considering the losses from this disease, the mortality is not the only factor to be mentioned. The death rate in the benign form of the malady may be only 3 per cent. while in the malignant form of the disease it may reach from 30 to 40 per cent. and even more of the affected animals. On the other hand, the mortality among calves in the benign form of the infection is considerable.

Although as a rule infected animals respond quickly to medicinal treatment, the Department does not advise such treatment of animals suffering with foot-and-mouth disease. If diseased animals were held for treatment, they would be a source of infection for some weeks or months, and if this plan were generally followed we should probably never be able to get rid of the disease. The malady is of such a highly contagious character, and the infection is so easily spread, that during the period of treatment one animal might communicate it to hundreds of others. Experience in European countries has shown the futility of attempting to eradicate the disease by curing individual animals. The affected animals that have passed through the disease become a source of further infection as virus carriers for weeks and months, even after they have apparently recovered, and are susceptible to reinfection as one attack does not confer permanent immunity.

It is a known fact that many of the infectious diseases of man such as typhoid fever, cholera, plague and diphtheria are spread by so-called bacillus or virus carriers. Such carriers may also occur in different diseases of animals, although definite data on virus carriers in animals have been established only in foot-and-mouth disease, Malta fever, and equine influenza. The possibility of such carriers existing in other diseases of animals such as hog-cholera has been intimated by Hutyra and other prominent authorities. The occurrence of virus carriers after the recovery of foot-and-mouth disease was first recognized by Loeffler in 1904, and is of special importance in countries where eradication is conducted with only quarantine and veterinary police measures.

The absolute solution of this problem causes many difficulties, because in foot-and-mouth disease, unlike in typhoid fever or diphtheria, the infective agent cannot be determined bacteriologically, since in foot-and-mouth disease we have to deal with an ultra-visible virus.

In 1905, Nevermann pointed out in an official report that an animal recovered from foot-and-mouth disease introduced the

infection to another herd after a lapse of eight months. Later, the Ministry of Wurtemburg reported two cases in 1907 in which recovered animals acting as virus carriers transmitted the disease. Further, Loeffler mentioned similar cases, and in his report suggested that all animals which are used for experimental work on foot-and-mouth disease should be slaughtered after the conclusion of the experiment. Again, at the Ninth International Veterinary Congress, Loeffler and Nevermann reported further observations on virus carriers of foot-and-mouth disease. The conclusions of Prof. Loeffler are as follows:

> Regular supervision of such farms is indispensably required.
>
> One of the most important results of the researches concerning foot-and-mouth disease is that the fact has been doubtlessly ascertained that, just as in numerous human infectious diseases, some of the recovered animals will remain carriers and continue the spreading of the virus.
>
> It seems that the number of such animals is limited.
>
> How long such animals can spread the virus has not yet been ascertained. According to the experience gathered up to the present moment even seven months after the end of the epizootic new infections have been caused by them.
>
> As yet no method is known to discriminate the virus spreaders.
>
> Infected animals are to be placed under observation during at least seven months. They must not be offered for sale, and should be kept separated from healthy animals.

Nevermann, in his report on foot-and-mouth disease prepared for the Tenth International Veterinary Congress held in London in 1914, attached great importance to the virus carriers in connection with the spread of this infection. He claimed that in the control of foot-and-mouth disease, it is absolutely necessary to give the so-called virus carriers due consideration, as otherwise the results of the measures inaugurated for the eradication of the disease may prove fruitless. He also cited numerous instances in which virus carriers were indisputably the propagators of the disease. Such observations have been made, especially during the last outbreaks in Germany, which afforded the authorities a splendid opportunity for collecting data on this phase of the disease. All the governmental veterinarians received instructions to make close observations relative to each outbreak with a view to tracing its origin. Special reports were required

in all instances where the disease could be traced to virus carriers. As a result of these steps, Nevermann was in a position to publish in the last annual report of the veterinary officers of Prussia over one hundred outbreaks reported from different parts of the country in which virus carriers were apparently responsible for the dissemination of the disease. Naturally it was impossible to establish with positive certainty that in each instance the virus carriers spread the disease, or that other factors might not have been responsible for the outbreaks; nevertheless, in considering the large number of outbreaks reported to be due to such a source of infection, we must accept that the careful observations of the district veterinarians include only such cases as were obviously traceable to virus carriers. The outbreaks in which the infection occurs after the lapse of a prolonged period following the recovery of infected animals may be divided into two groups: The first group would embrace those cases in which susceptible animals are placed into previously infected stables and subsequently become infected—in such cases it might be possible that the virus was still present in some remote places not reached by the disinfectant, the newly introduced animals contracting the disease from such a source. The second group would include the cases in which recovered animals after the disappearance of the disease are introduced into healthy herds, thus infecting them. In these cases the disease usually appears among the animals of the healthy herd only after several weeks, and at times even after months. At the same time, the animals which brought the infection into the herd do not become infected. Investigations which have been conducted in order to determine what part of the recovered animal harbors the infection have not been uniform in their results. Some investigators have found that the saliva of a recovered animal was responsible for the spread of disease. In other cases, the virus is supposed to have been spread from the crevices in the hoof. The recent studies of Zschokke are particularly interesting on this phase of the subject. He undertook the work of establishing to what extent the feet of recovered animals may be responsible for the dissemination of disease, and according to his findings, the vesicles which occur in the skin of the interdigital spaces and the plantar cushion may also extend under the horny capsule forming their furrow-like spaces along the sensitive laminae of the wall and sole, and he also found hidden vesicles in the hoof which did not open to the outside. It therefore appears possible that virulent lymph which is present in these locations penetrates between the horny struc-

ture where it becomes enclosed until it is brought to the surface by the natural wearing of the hoof, and is then responsible for the transmission of the disease. The findings of Zschokke would explain the possibility of the occurrence of the disease in localities in which animals harboring the virus in such fashion are introduced into healthy herds, and it is considered possible that the greatest proportion of the virus carriers harbor the infection in this manner. In countries where the eradication of foot-and-mouth disease is conducted by the enforcement of quarantine measures, these so-called virus carriers must therefore be a constant menace to the elimination of the disease, and if for no other reason than this, it appears that whenever the circumstances permit, eradication of the disease should be carried out by slaughtering the infected herd. The fact that recovered animals might transmit the disease for six or seven months to susceptible animals would cause a constant uncertainty, and require a vigilance impossible of enforcement.

In order to demonstrate the extent of the spread of this disease in Germany, and to demonstrate the advisability of controlling the disease by the slaughter of the infected herds in connection with sanitary and quarantine measures, authentic statistical data are given below.

The outbreak which appeared in Germany in 1888 reached its height in 1892, when 1,304,299 cattle, 2,193,187 sheep, and 4,238,262 hogs were affected with the disease. It gradually diminished after this time, but again reached very great proportions in 1899, when 1,885,774 cattle, 1,505,830 sheep, and 814,862 hogs were affected. After that time the disease gradually diminished, although it continued to exist to a greater or less extent. In 1910 it appeared to gain in virulence, and in 1911 the affection was more widely spread than ever before in the history of that country. In that year 3,366,369 cattle, 1,602,627 sheep, 53,674 goats, and 2,555,371 hogs were affected with the disease. Similar statistics could be cited from other European countries in which the policy adopted consisted in endeavors to control the disease by quarantine measures.

The prevention of such widespread epizootics among domestic animals must of necessity have a great influence upon the animal industry of the country. The losses which may be attributed to the disease, outside of the mortality, are heavy. These include the rapid loss in the condition of the animals, especially in fattened stock; the diminution in the milk yield of dairy cows, and the subsequent appearance of garget in a considerable

proportion of the affected animals, with a total destruction of milk secretion in one or more quarters of the udder; likewise, abortions frequently occur in pregnant animals, as well as other complications which are associated with outbreaks of this disease. Furthermore, feet complications are particularly frequent in fat stock and hogs, which not infrequently result in the sloughing of the hoofs.

Various authorities have aimed to establish the depreciation in value of an animal after an attack of foot-and-mouth disease. An English practitioner of wide experience states that it is none too high to place the loss on each animal that becomes affected and that ultimately recovers at $20 when milch cows or feeding cattle that are nearly finished are under consideration. Other eminent authorities state that the deterioration will amount to from 20 to 30 per cent. of the value of animals. In Denmark it is figured that the depreciation in value would amount to $8 per head, in Germany $7, and in Holland $10. Allowing the smallest figures to stand as the average, and considering that there are in the United States about 58,000,000 cattle, of which only 50 per cent. might become infected, the losses sustained for cattle alone would amount to over $200,000,000, to make no allowance for injury done to swine, sheep, goats and other susceptible animals.

The paralyzing effect upon the traffic in live stock which results from the outbreak, and necessary quarantine which must be established to control the disease, and which must extend over a long period, must also be considerable from an economical standpoint during the prevalence of the contagion. For instance, the disease causes the closure of markets and the prevention of fairs, shows and public sales, interferes with the proper supply of milk and meat, and prevents the exportation of live stock. States not infected refuse admission of animals from the quarantined states, and owners of herds free from disease naturally demand protection from exposed or infected stock. In view of these circumstances it is not surprising that those who have seriously taken part in the struggle against this disease sooner or later possess the conviction that success is to be expected only from energy and resoluteness.

In the previous outbreaks of 1902 and 1908, the expenditure of the United States Government in the eradication of the disease amounted to about $300,000 in each instance. Between the three outbreaks, including the present one, there were six-year intervals, and by distributing this expenditure over the intervening

period the total amount per year would be only $50,000, which is very small when compared with the losses which would result if the disease had been allowed to spread over a considerable area of the country.

Experience with the disease in various countries indicates that once the infection has been allowed to spread over large areas, the contagion practically has to wear itself out before it subsides. But even then the virus will remain dormant only during the period of acquired immunity of the animals. A reduced resistance in the animals will again afford an opportunity for the virus to assert its infective action, and outbreaks will start anew with increased force. These facts probably account for the periodical curves which are noted in the presence of the disease throughout continental Europe, and if it were possible for the respective governments to adopt measures by which they could eradicate the disease they would gladly make the financial sacrifices which it would be necessary to incur through the slaughter of infected and exposed animals in newly appearing outbreaks.

In consideration of the above facts, we can readily see the advantages of eradicating the disease by the slaughter and burial of all exposed and affected animals, enforcement of rigid Federal and State quarantine measures, and thorough and prompt cleaning and disinfection of the infected premises, and the experience gained in the former outbreaks substantiates the belief that this is the only effective procedure in the controlling of the disease in this country.

In Europe until a comparatively recent date the disease has been combated by isolation and quarantine, and the cleaning and disinfection of infected premises, but these measures have not been effective, as is shown by the continuous existence and the wide dissemination of the infection. The results of combating the disease without the slaughter of infected and exposed animals is shown by the statements of Professor Dammann of Hanover, who said that without absolute quarantine of the infected farms preventing even the movement of persons, the control of foot-and-mouth disease is impossible; but this stringent measure, he states, cannot be executed in eradicating the disease, and notwithstanding the quarantine of infected stables, reinforced in many instances by the quarantine of communities, and often of a large zone around these communities, and, further, the very extended prohibition of animal traffic and the supervision exercised over abattoirs, dealers' stables, and railroad cars, the disease continued to prevail.

Professor Loeffler of Germany says that foot-and-mouth disease is spread more and more every year and every year it costs the German Empire enormous sums. Necessary measures have been taken with the greatest care, suspected premises have been closely quarantined, and these measures have been extended to whole communities, and even to entire districts, but notwithstanding that the disinfection had been carefully carried out, the disease kept spreading.

In regard to the slaughter of infected and exposed animals as one of the measures in the eradication of the disease, Professor Hess of Switzerland has concluded that in order to cope with the disease "the diseased animals should be destroyed completely. including hides and hair, and the exposed animals slaughtered under police supervision."

In England slaughter has been resorted to quite frequently in recent years to stamp out the disease when first introduced. Dr. Cope, speaking of the outbreak in that country while he was the chief veterinary official, said: "It was eventually stamped out in the County of Kent by the purchase, slaughter and burial of several of the affected flocks."

Dr. Fleming of England, speaking of the outbreak in Australia, said, "There was really only one outbreak in Victoria among the cattle on two farms into which it had been introduced by an imported bull. Here the cattle were destroyed and with them the disease."

Dr. Cope refers to a communication which he received from Dr. Bang of Copenhagen, in which Dr. Bang says: "Since 1876 we have had every year, once or twice, cases of foot-and-mouth disease; in all cases we killed the cattle, sheep and swine on the farms even if only one calf was affected." Dr. Cope stated at the International Veterinary Congress at Baden-Baden in 1899: "We have now been free from the disease since 1894, and I can assert that at the present time foot-and-mouth disease is more dreaded by farmers and stock owners of Great Britain than cattle plague or pleuro-pneumonia, and they are willing to put up with whatever restrictions of however drastic a character considered necessary by the central department to stamp it out."

Remmelts, in referring to the struggle against foot-and-mouth disease in the Netherlands, mentions in his report to the International Veterinary Congress at London in 1914 that "preference must by far be given to the immediate removal of virus by slaughtering diseased and suspected animals than to any other measure." By adopting such methods the extermination

of existing, as well as the suppression of new virus carriers is accomplished. In his article, special stress is laid upon the necessity of properly pasteurizing all by-products of the creameries including whey, and of stopping the movement of cattle in the infected district.

Mettam, at the same Congress, gave his experience with the disease in Ireland and stated that the animals, both infected and exposed, are slaughtered and their carcasses burned or destroyed without any attempt to salvage any portion of the animal, owing to the danger of spreading the virus far and wide.

Professor Leclainche, a representative of the French Government at this Congress, likewise advocated the slaughter of diseased and exposed animals in countries where the infection has not become firmly implanted, where natural boundaries are present, or when the disease occurs in the benign form.

The above quotations are sufficient to show that the slaughter of diseased animals has been frequently adopted as a means of combating the disease in Europe, and it has been more successful than any other measure. In fact, the International Veterinary Congress held at Baden-Baden in 1899, stated in one of its resolutions passed with reference to this disease, that it was necessary to authorize slaughter and to establish uniform sanitary regulations in order to arrest and eradicate this burdensome plague.

At the conclusion of Doctor Mohler's paper there was a general discussion by the various state authorities and those interested in the control and eradication of this scourge. The discussion occupied the balance of the afternoon and the meeting was adjourned until the following morning, when Doctor Bahnsen opened the discussion of Tick Eradication. He cited his experiences in Tick work and pointed out that the principles involved in the work which are in keeping with those applicable to the control of other animal plagues, namely: Education, Quarantine and Disinfection. He gave figures to show the great loss to the Southern States, directly and indirectly occasioned by the Tick and estimated it as $150,000,000 annually. He made a plea for an amendment to the Federal Law, to prohibit the present method of allowing undipped cattle to be moved out of infected states for slaughter. Doctor Bahnsen's argument was based on good logic and several members entered into a short discussion, supporting the doctor's suggestions. The discussion on this Southern topic ended, a paper of great interest to those interested in dairying was presented by Doctor H. B. Fabill of Chicago. He was followed by Doctor L. A. Warren of Chicago, the subject

being Farm Sanitation. The principal points discussed in this paper was barn construction for the comfort and productivity of the cow, and giving preference to concrete as building material with special mention as to a good water supply.

A very able paper which had been prepared by Doctor Myer on Atypical Black Leg, was read by one of the members, Doctor Myer being unable to attend. This paper was confined largely to scientific technique prompted by the fact, that it was the author's opinion that many cases of Atypical Black Leg are not properly diagnosed, but are classed as poisons, etc.

The meeting was adjourned for lunch, reconvening in the afternoon, The important subject of Hog Cholera Investigations of the United States Department of Agriculture was presented by Doctor Dorsett. The Doctor, in his usual able way, treated the subject with great satisfaction to all his listeners. He made division of the topic into First, Education; Second, Control; Third, Experimental; Fourth, Eradication. He pointed out what extensive and searching steps had been taken to avoid future contamination of serum and virus, also giving data, showing results of the extended work with serum alone and serum-virus treatment. He also stated that after considerable observation it was his opinion that the serum-virus treatment had no effect on sterility and that in the serum treatment alone immunity prevailed from three weeks to about three months, and that the percentage of reinfection was highest in the herds treated with serum alone. It was also his opinion that there is something in seasonal prevalence and it appears that the disease reaches its height in the fall season. Statistics show great increase in hog raising in certain states, particularly in Iowa and Illinois, and decrease in the percentage of death rate due to cholera. The discussion of Hog Cholera was further continued by Doctor Fischer of Ohio, the title of his paper being "Uniform Methods of Controlling Hog Cholera." His data covered four years on 1,879 farms and showed a decrease in the percentage of deaths from cholera in proportion to the use of serum *under proper supervision* and an increased percentage of death where serum is used miscellaneously. Doctor Fischer set forth the following precept for good results, prompt reporting of sick hogs, good sanitation and proper use of certified serum. The next speaker was Doctor Haslan on the Standardization of Anti-Hog Cholera Serum. He pointed out the variation in individual hogs and the apparent necessity of several test animals in order to properly standardize serum. Dr. Bolser of Indiana then read a paper on Preparation of Hog

Cholera Serum with particular reference to the buildings, equipment, etc., and with the aid of lantern slides, showed some modern buildings and equipments being used to-day in this work. Doctor John Reichel presented an able paper on the Refinement of Hog Cholera Serum. This paper contained such valuable technique that every one should avail themselves of its entire contents by securing a copy of the Association's annual report.

The discussion was closed by Doctors White and Conway, the former strongly advocating simultaneous treatment, while Doctor Conway still holds to the opinion that he has usually advocated, sanitation as first method of control looking toward less immunization and final eradication, his slogan would be simultation of sanitation rather than serum-virus. This closed the afternoon session. The Association reconvening again at 8 p. m. in joint meeting with the Chicago Medical Society, Doctor A. G. Clark, President of the Chicago Medical Society, presiding. A most interesting subject, Cancer of the Breast, was taken up by Doctor W. L. Rodman, President of the American Medical Association. The Doctor showed clearly in his address his extensive knowledge of the subject and said that there occurs in the United States 100,000 deaths annually through cancer, and that fully one-fourth of those are cancer of the breast. He stated with great positiveness the necessity of early diagnosis and that every hard enlargement of the breast should be treated with suspicion and pointed out how a general clinical knowledge would be of great assistance in early diagnosis, cancer in the early stage being painless and adherent to the skin as against benign growths which are painful and not adherent. The Doctor presented several splendid views of the operating field before and after operating and added that the only treatment in operable cases is operation supplemented by other methods that have certain amount of value such as X-ray, radium, etc.

Professor D. K. Millen presented an interesting paper on Insects as Carriers of Disease, and Doctor B. H. Ranson added a splendidly prepared paper on Trichinosis.

The following morning the discussion of the Control of Inter-State Shipment of Live Stock was ably presented by Doctor Gibson of Iowa and intelligently discussed by Doctors Kigin, Kline and Moore. This ended the program as outlined and was followed by election of officers for the ensuing year, the choice of the members being for President, Dr. J. I. Gibson, Des Moines, Iowa; Vice-Presidents, Dr. B. F. Davis, Cheyenne, Wyoming; Dr. J. G. Wills, Albany, N. Y.; Dr. O. E. Dyson, Springfield, Ill.; Dr.

E. Pegram Flower, Baton Rouge, La.; Mr. Wm. Penn Anderson, Kansas City, Mo.; Secretary-Treasurer, J. J. Ferguson.

We predict the continuance of the valuable work in which the young Association has so ably begun, in fact it is our opinion that with Doctor Gibson as President and the tried and true Professor Ferguson as Secretary we have a pair of officials that will be hard to excel. In conclusion it would be our opinion that the program, if anything, was a little too full for proper discussion of such important subjects. Either that or most minds centered on foot-and-mouth disease. At least it seemed to us that the meeting lacked the interest and general rousing discussions that has been customary at most of the previous meetings.

J. F. D.

## MASSACHUSETTS VETERINARY ASSOCIATION.

Regular monthly meeting of the above association was held at the New American House, Boston, Mass., February 24th, at 6 p. m., 1915. Prior to which and through the courtesy of The E. L. Patch Company, manufacturing chemists and pharmacists of Boston, the members of the association were invited to visit and inspect their laboratory at Stoneham, arriving at 3 p. m. Before inspecting the laboratory they were shown the method of handling orders and formulas. Whenever a product is made by any department they issue an order to the office for a manufacture slip, which is delivered and charged to the department calling for it. A duplicate is always kept in the office. The manufacture slip goes to the proper department where an order is made for the stock by the foreman of that department, who attaches to the manufacture slip a rider giving the number of the lot to be made and the multiple proportion that is to be made, and the quantity that is required of each ingredient for the particular lot made. This rider is checked by a second person, then the rider, the original slip and the order for stock goes to the stock room. There the material is gotten out, checked up by a third party, who also checks the weighing, signing the rider at the same time. When the order is completed the original blank from the foreman of the department is signed by the party delivering the goods and by the party who checked the items and the weights. All manufacturing is done by the metric system. The orders and riders are returned to the office with the manufacture slip and there retained for a period of two years for checking purposes.

Attention was called to the fact that a customer sometimes

unwisely empties the product purchased from one house into a bottle bearing the label of another house. Then complaint is made of the product and injustice is done to the house whose label is on the package, because the goods are not theirs. Not infrequently when a sample is called for, for examination, it is determined by the laboratory that no such product was ever made or supplied, the goods having been obtained from some other house.

The method of bottling was illustrated, no goods being bottled except upon a special bottling order which bears the name of the product and the quantity, the name of the party who selects the goods, the name of the party who selects the labels, the name of the party who compares them, the name of the party who labels and wraps and the laboratory number. This laboratory number which goes upon the order is also placed upon the labels which are used; also placed upon the package from which the labels were taken and in many cases also upon the original bulk package from which the goods were taken.

The method of caring for private formula orders and special orders was carefully explained.

Leaving the office the first visit was to the printing department, where the care taken in checking up all labels to conform to the legal requirements, the methods of executing different kinds of work, including embossing, and the method of estimating the cost of each job of printing, was explained at some length.

In the fluid extract department the method of thoroughly moistening the drug for maceration before packing, the method of packing and percolating and recovery of the alcohol from the dregs was shown. The percolates are not pushed out with water, but the original menstrum is used to the finish and then the drug saturated with menstrum is placed in a suitable apparatus and the alcohol recovered from it. After this alcohol has been treated with permanganate of potassium and other purifying agents, it is redistilled and made fit for use.

In the milling department the method of converting different drugs into percolation powders and dusting powders by use of various types of mills, was fully explained.

In the extract department was shown the method of concentrating percolates for the production of solid extracts.

In the sugar coating department the various steps in coating pills and tablets, using various kinds and coloring, and the method of finishing the goods was demonstrated by the work

going on. On the same floor was the room for making and bottling tooth powders, and the room for making troches.

In the granular salt department the mixing of the salts, starting effervescence on the steam table, subsequent drying and granulating was explained.

In the powder and cachet department was seen the method of putting up seidlitz powders, headache powders and various cachets.

In the assay department the detail required for identifying and standardizing purchased goods and manufactured products was explained at some length, involving the use of the refractometer, polariscope, microscope, etc. Occasionally goods are received that are not true to label and it is necessary that every purchased product should be examined. Occasionally, for various reasons, a customer desires to return goods. They cannot be accepted and put in stock from open packages without going into expense of examination by the assay department. In some cases the cost of this examination is greater than the value of the returned product. A very thorough system of record keeping of all assay work by use of card index system supplemented by entry in duplicate upon all office manufacture slips, demonstrated the care that is necessary to keep a record of each individual lot.

The next visit was to the tablet and pill department, where the method of mixing powders, granulating, drying and compressing were features of great interest. Some of the party were surprised at the amount of detail to make proper compressed tablets, such as each individual powder must be granulated, using for each powder an excipient particularly adapted to the product in hand; that different size granules must be used for different products, and different degrees of dryness looked after in compressing. It was easily seen that the call for special tablets in small lots, if met by the manufacturer, is at a loss. The amount of time involved in cleaning machines between different lots and the amount of time required to adjust the machines being just the same for 1,000 as for 100,000, and no price can be charged which will pay the manufacturer for accommodating the customer in making small lots.

A separate room with separate machinery is kept for corrosive tablets and things of that sort. A separate room and separate machinery for making nitroglycerin tablets. In each of these rooms there are properly constructed hoods with glass fronts connected with fans to exhaust the air so that the opera-

tor can handle the material without danger of breathing the dust or the evaporating nitroglycerin.

In the same department was shown the method of making hypodermic tablets and ordinary round and oval pills. In the bottling room for tablets and pill department was shown the method of keeping track of time used in putting up various products, the bottling slip being stamped by a time clock when received, stamped again when they start to put up the lot and stamped again when the work is completed. From this record the accurate time is easily calculated.

In the labeling room for general goods every care is manifested to expedite the work and have it accurately done. A large number of closets contain all the various kind of containers employed and a card catalogue gives the information as to where each container can be found. The machine for gluing and closing cartons, for filling tooth paste tubes and bottle capping, etc., were right at hand. The entire upper story was devoted to putting up Patch's Sterilized Sugar of Milk.

In the stock room were large quantities of various chemicals and products required for manufacturing, were stored in suitable containers in a fireproof building with stock shelves of steel. At one side of the stock room was a vault under lock and key. containing all active poisons and alkaloides. No orders could be filled from this vault without first obtaining the key from the person in charge and having a cross check made upon all goods removed from the vault.

In the basement was a large vault for the storage of opium and vanilla beans, essential oils and products of that nature. On this floor were made elixirs, emulsions, peroxide hydrogen, ointments, syrups and suppositories.

After two hours spent in this inspection each member received a souvenir package containing many of the special preparations manufactured by The E. L. Patch Company.

On leaving the laboratory the members extended to Mr. Patch a vote of thanks for the invitation and courtesy shown. All expressing themselves as being well pleased with the afternoon's trip, which was both enjoyable and educational.

At 5.20 the members proceeded direct to the New American House, where President Seale called the business meeting to order at 6.10 p. m., with the following members present: Drs. Abele, Bradley, Burr, P. J. Cronon, Dodge, Draper, Emerson, Gaw, Howard, L. A. Paquin, H. W. Peirce, Pierce, Seale, Simpson, White, Winchester, Winslow, Pugh and several guests.

The records of the January meeting were read and accepted, after which six applications for membership were presented.

There being no reports of committees the subject of the secondary outbreak of foot-and-mouth disease in this State was discussed at some length, as was also some case reports.

Dr. Harrie W. Peirce reported the serious illness of Dr. F. C. Blakely, and by a unanimous vote the secretary was instructed to send to Dr. Blakely at the Boothby Surgical Hospital a basket of flowers, together with a letter of sympathy.

Adjournment, 7.45.

W. T. PUGH, Secretary.

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## VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

### *February Meeting.*

The regular monthly meeting of this association was held in the lecture room of the N. Y. American Veterinary College Wednesday evening, February 3, 1915.

The president, Dr. H. D. Gill, being absent, Dr. C. S. Chase, vice-president, presided and called the meeting to order at 8.45 p. m.

The minutes of the January meeting were read and approved.

Dr. R. W. Ellis, chairman of the Board of Censors, reported that the censors recommended that the application of Dr. Guilo Cavazzi for reinstatement as a member of this association be disapproved.

It was regularly moved and seconded that the report of the Board of Censors be received—carried.

It was regularly moved, seconded and carried that Dr. Guilo Cavazzi be not reinstated as a member of this association.

Dr. John A. McLaughlin then presented an interesting paper entitled " The Auxiliary System."

In this article Dr. McLaughlin advanced some theories which are directly opposed to the regular teachings of physiology. He also exhibited several charts demonstrating his ideas.

This paper was discussed by several of the members and visitors present. Dr. Archibald McNeil not being present to read his paper, the " Question Box " was then taken up.

The first question asked was, " What is the best treatment for Azoturia? "

Dr. Griesman stated that he had had good results from the

use of Digatoxin, giving ten tablets hypodermically of 1/250 grs. each.

Dr. Ellis said that prophylaxis is the best means to employ, and he always administers a physic to an animal that has been standing before putting the same to work.

Dr. Ackerman cited two or three odd cases of this disease and stated that he had had the best results from the use of large doses of turpentine and linseed oil.

Dr. Cochran said that on some post-mortem examinations made the previous week at the University of Pennsylvania the change in the muscular fibre was very marked. It has the appearance of cooked meat.

Several members cited interesting cases of this disease, some of which had developed while the animals were working every day.

Dr. W. Reid Blair stated that he had held a great many post-mortem examinations on azoturia cases and found the blanched appearance of the muscles, especially the psoas muscles. He also succeeded in isolating an organism which, when introduced into hares after a few days, produced paralysis of the right hind leg, followed by death. In these experiments the heart blood was taken in all cases.

The next question was, " What is the best treatment for shoe boil? "

Dr. P. Burns stated that he opens up any soft spots and removes by ligation.

Dr. Shaw stated that he is quite successful in dissecting them out and suturing the wound.

Dr. Ellis said that he punctures the shoe boil to the center with a firing iron and then keeps the opening packed. Absorption rapidly takes place.

Dr. Cochran said that he excises the tumor and closes with figure eight sutures.

Dr. Ackerman recommends making a transverse incision to remove the growth, and leaves a flap hang down which is sutured with good results.

After operating, it was unanimously agreed that it is best to keep the animal in a standing position.

It was also brought out during the discussion that this condition is not caused by the pressure of the shoe or hoof on the elbow, but is due to slipping on the elbows while lying down or getting up. A similar condition is often seen in large dogs.

The application of Dr. A. Silkman, chief veterinarian of the

Department of Health, was favorably reported by the Board of Censors, and on motion the secretary was instructed to cast one ballot for the election of Dr. Silkman to membership. This was done and Dr. Silkman was declared duly elected.

Dr. Ackerman spoke of the opthalmic test and asked that this association fix a fee for this test that would be fair to all concerned.

After some discussion it seemed to be the consensus of opinion that two dollars per horse, except where there were a large number together, was a fair and reasonable charge to make for the test.

Dr. Blair said that the Bronx Horse Owners would meet Tuesday evening, February 9th, at 137th street and 3d avenue, to discuss the glander question and other matters of interest to horse owners, and invited as many of the members as could do so to attend this meeting.

Dr. Griesman's resignation as a member of the Prosecuting Committee was read, and on motion, seconded and carried; ordered laid on the table for the action of the president.

Drs. Ackerman, Cochran and Griesman then gave an interesting account of the conference at Ithaca and spoke very highly of the program and large attendance.

A vote of thanks was tendered Dr. McLaughlin for his valuable and interesting paper.

The meeting then adjourned.

ROBT. S. MACKELLAR, Secretary.

*March Meeting.*

Meeting of the V. M. Association of New York City was called to order by the vice-president, Dr. C. S. Chase, at 9 p. m.

The minutes of the February meeting were read and approved.

Dr. Griesman gave an impromptu report of the work of the Prosecuting Committee, and also spoke of the advisability of having the law regulating the practice of veterinary surgery and medicine changed.

It was regularly moved, seconded and carried that the report of the prosecuting committee be received.

Dr. Danziger moved that a committee be appointed to revise the present veterinary practice law.

This motion was seconded and unanimously carried.

The chair appointed as a committee Drs. Griesman, Cochran and Ellis.

Neither of the essayists of the evening having arrived, the "Question Box" was opened and the first question asked was, "What is the best treatment for rheumatic stiffness in middle aged horses, those that shift from one leg to the other, and usually poor feeders?"

Dr. Burns advocated disposing of the horse as in his opinion it does not pay to treat the above condition.

Dr. Clayton said that he doubts that rheumatism exists in horses.

Dr. Duncan (M. D.) said that in human practice he now treats rheumatic conditions by injecting hypodermically a filtrate of the nasal discharge with remarkable results. It is now claimed that rheumatism is due to a micro-organism which enters the animal economy through the mucous membranes.

The second question was, "What is the best treatment for horses with shipping fever?"

This was discussed at some length by several members, and it was suggested that auto-therapy ought to prove useful in this condition. Dr. Duncan said that he was sure good results would be obtained by the use of this form of treatment.

The third question asked was, "What has been done by Dr. V. A. Moore regarding the pathology of azoturia?"

The author of this question, Dr. T. A. Keller, stated that what prompted him to ask this question was the statement made by Dr. Moore, to this association, two or three years ago, that he would take up the pathology of azoturia and try and find a remedy for this dreaded disease.

Dr. Keller moved that the secretary write Dr. Moore regarding this question and also invite him to read a paper or address this association at his earliest convenience—seconded and carried.

The fourth question asked was, "What is the New York State law in relation to glanders?"

This was productive of quite a discussion by the members and visitors present.

The fifth question asked was, "What is the dose of vaseline for the horse internally and what medicinal benefit has the same?"

It was stated that it is given in ounce capsules in catarrhal conditions of the bowels.

Dr. Archbold McNeil, of the New York Department of Health, accompanied by the president, Dr. H. D. Gill, arrived at this time and Dr. McNeil was introduced and gave an address on the blood tests for glanders. The doctor explained these tests

in detail and gave some of the results of the tests during the past year. Stated that of about 10,000 specimens of blood examined, 10 per cent. showed reaction. Where a four plus reaction is shown, glander lesions will nearly always be found. Out of 800 post mortems held, three did not show lesions.

In taking samples of blood, care should be taken that tubes are clean and non-alkaline. Blood taken for examination should be forwarded to the laboratory as soon as possible, and if unable to do so at once, should be kept in ice box until delivery is made. Advised sending the serum free from the blood clot.

The site of drawing blood should be sponged with alcohol, or iodine applied.

When Dr. McNeil had finished his remarks he answered a number of questions which were asked, and promised to give a practical demonstration of the tests at some future meeting.

Dr. Gill then introduced Dr. Silkman as the chief veterinarian of the Health Department of New York City.

Dr. Silkman said that working in conjunction with the State department he would do all in his power to control and eradicate glanders.

The doctor was asked to prepare a paper to be read at some future meeting.

Dr. C. S. Chase called the attention of the members to the new Federal Narcotic law, known as the Harrison Law, and warned them to observe the provisions and regulations of the same.

The question of the annual "Smoker" was then brought up, and on motion, seconded and unanimously carried, it was decided to hold the same, and the president asked to appoint a committee of arrangements.

A hearty vote of thanks was tendered Dr. McNeil for his valuable and instructive address.

No future business appearing, the meeting adjourned.

ROBT. S. MACKELLAR, Secretary.

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## TWENTY-FIFTH ANNUAL CONVENTION OF WISCONSIN VETERINARIANS.

The twenty-fifth annual convention of veterinarians held at Madison, Wisconsin, January 19-21, 1915, marked an epoch in the annals of the veterinary professions of the State that was a fitting tribute to the silver anniversary of the veterinary associa-

tions of the State. It was the largest, most instructive, most interesting and most beneficial veterinary meeting ever held in the State and was altogether in keeping with twenty-five years of veterinary progress, as we view it from a standpoint of proficiency in the veterinary profession; and can only come as a result of a united professional effort, such as prevailed at this convention. And now that the dove of peace hovers over the veterinary profession of our State, we expect to accomplish much more in the future than has been accomplished in the past.

The joint committees from both associations are entitled to the most profound thanks from the veterinarians of the State for the sound judgment that was used; for into their hands were trusted the adjusting of all past differences and their recommendations were highly creditable to themselves and most satisfactory to the convention; and was adopted as a whole. Two important recommendations by the committee were: (a) That roll call be read, and every member whose name was not objected to and who was paid up in dues would be eligible to membership in the new association. (b) That a new name be adopted by the association, and that the president appoint a committee of three to suggest a suitable name. The name suggested by the committee and adopted by the convention was "Wisconsin Veterinary Medical Association."

A new State charter has been applied for, but according to the constitution and by-laws now in effect, the name can not be changed for one year.

Having been a member for the last thirteen years, and having watched the strife for supremacy continue in our State, it is with a feeling of pride and most profound satisfaction to me as well as most all others to have participated in this amiable and most creditable termination that has been brought about.

The professional program consisted of the president's address, which was a strong plea for harmony and carried much weight in that respect, and also contained many suggestions for the good of the veterinary profession of the State.

Twenty-four new members were admitted to membership, which is the largest number ever taken in at a single meeting.

The new officers elected were: President, Dr. J. W. Beckwith, Shullsburg, Wis.; Vice-President, Dr. L. J. O'Rielley, Merrill, Wis.; Secretary, Dr. W. A. Walcott, Madison, Wis.; Treasurer, Dr. J. F. Raub, Monroe, Wis.

Dr. A. N. Lawton's paper on *Caesarean Operation in the Sow* was a very complete paper and much good was derived from the discussion of the same.

Dr. A. E. Behnke, Inspector, in charge of the Bureau for the State, delivered a very interesting talk on foot-and-mouth disease, and so far as was known at that time there wasn't a single case of the disease in the State. He also made the statement that the only sure method of diagnosing the disease was by inoculation. There was a very interesting discussion from which every one present received much benefit.

The illustrated lecture on hog cholera, by Dr. Herbert F. Palmer, and also by Dr. Geo. H. Roberts, were especially interesting and instructive, as they were a new method entirely of demonstrating hog cholera and its control.

The joint paper by Dr. Herbert Lothe and Dr. B. A. Beach entitled, "*The Bactericidal Properties of Some Common Antiseptics,*" was an especially interesting and a most thorough paper and dealt at great length with the subject.

Many other papers of great importance were read and discussed, such as: "*Ptomaine Poisoning,*" "*Interstate Inspection,*" "*Improvement of Conditions Governing Live Stock Sanitary Board,*" "*Variations in Therapeutic Action of Medicine,*" "*The Veterinarian's Assistance to the Health Department,*" all of which were especially instructive.

The banquet at the Park Hotel was attended by one hundred and forty-seven members and represented the largest number of veterinarians that has been present at a banquet in the history of the State.

For the first time in the history of the association, the participants were honored by an address from the Hon. E. L. Philips, Governor of the State of Wisconsin. He especially dwelt on the integrity and honorable method that should be practised by the veterinarian, and said that those that did not possess and practise these methods should be debarred from the association, and their license revoked.

All in all a most enjoyable evening was spent and may many pleasant thougths of this convention especially linger long in the minds of all those who were present.

A number of clinics were held at Dr. J. P. West's hospital in the forenoon of the twenty-first.

Harness races on the ice, given especially for the benefit of the association by the "Harness and Saddlers' Club," of Madison, was enjoyed by every one and all took leave of Madison with the one thought foremost in their minds: Harmony being the strength of all institutions, but more especially of the veterinary profession.

DR. J. W. BECKWITH,
President.

## MARYLAND STATE VETERINARY MEDICAL ASSOCIATION

The first business of the meeting was the annual election of officers for the year 1915, on Tuesday, February 9, 8 p. m., at Hotel Raleigh, Baltimore, Md., which resulted as follows: Dr. F. H. Mackie (Baltimore), President (re-elected); Dr. Jno. P. Stewart (Baltimore), Vice-President; Dr. Jno. H. Engel (Baltimore), Secretary-Treasurer (re-elected).

Board of Censors: Dr. E. C. Fox (Baltimore), Dr. A. K. Hagerty (Baltimore), Dr. Fred. L. Felber (Baltimore), Dr. G. H. Grapp (Port Deposit, Md.), Dr. J. Rome (Germantown, Md.).

After completing the election of officers, and regular business, there was delivered by Dr. Adolph Eichorn, of the Federal Bureau, a most interesting talk on *The Proper Application of Serums Used in Veterinary Practice;* following which there were covers laid for thirty-five, and a banquet enjoyed.

There was represented, at the meeting, almost every county in the state.

Much has been accomplished during the past two years in Maryland; there having been enacted during the last session of Legislature a *Veterinary Law* that is a great improvement over Maryland's old law, and compares most favorably with the veterinary laws of all other states.

Our Association is asking for the names of all Maryland practitioners to be put upon its mailing list.

JOHN H. ENGEL, Sec.-Treas.

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## ASHTABULA, LAKE AND GEAUGA VETERINARY MEDICAL ASSOCIATION.

The meeting of the above association was held at Painesville, Ohio, February 28, 1915; afternoon and evening sessions.

The afternoon session was devoted to a clinic. A *Vaginal Ovariectomy* was performed on a mare by Dr. R. A. Greenwood, assisted by Dr. R. R. Laughlin, of Chardon, Ohio.

The animal was controlled by stocks at the hospital of Dr. Greenwood, and operated without anesthesia.

Some very interesting case reports were given by Dr. Allen, Discussion opened by Dr. Laughlin.

Six o'clock luncheon was served by Mrs. Greenwood, after

which the meeting was called from refreshments to labor by Pres. McCollister.

Minutes of previous meeting were read and approved. The most important feature of the business meeting seemed to be that of veterinary legislation.

Motion made and carried that the association write a letter signed by the officers, and one copy be sent to the Representatives of each of the three counties for which our association is named, asking that the proposed amendment by Representative Smith, of Morgan County, to Senate Bill 42 (viz., that of changing the date from 1894 to 1905, whereby more "quacks" and law-violators may be licensed to practice on affidavit) be voted down, with all possible influence available.

The minor details being attended to for the benefit of organization, the meeting was adjourned to meet at the home of Dr. McCollister, of Willoughby, Ohio.

DR. R. A. GREENWOOD. Secretary.

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## NATIONAL COUNCIL—ALPHA PSI FRATERNITY.

The fourth biennial convention of the Alpha Psi Fraternity was held in Ithaca, N. Y., March 5th and 6th, 1915. Each of the nine chapters was represented by one delegate, and three members of the National Council were in attendance.

Alpha Chapter (Ohio State Univ.) was represented by Will T. Beach, of Geneva, O.; Beta (Cornell), by L. R. Cornwell, of Machias, N. Y.; Gamma (Chicago V. C.), by B. C. Bridges, Mineral Point, Wis.; Delta (Kansas City V. C.), by C. C. von Gremp, of Carthage, Mo.; Epsilon (Univ. of Penna.), by Thos. W. Munce, of Washington, Pa.; Zeta (Colo. Agri. Coll.), by B. W. Myers, of Fort Collins, Colo.; Eta (Kansas Agri. Coll.), by Wm. A. Hagan, Manhattan, Kan.; Theta (Ala. Poly. Inst.), by Godfrey C. Bevan, of Birmingham, Ala.; Iota (Mich. Agr. Coll.), by L. A. Mosher, of East Lansing, Mich.

Members of the National Council present were: Dr. H. E. Kingman, President, of Fort Collins, Colo.; Dr. George L. Drury, Treasurer, of Dorchester, Mass.; and Dr. H. Preston Hoskins, Secretary, of St. Paul, Minn.

Nearly all of the two days was consumed in transacting the business of the convention, many matters of importance receiving attention. It was decided to print the proceedings in detail for distribution among the members. An Alpha Psi publication, to

be issued quarterly, will be started as soon as possible. The next convention will be held in Kansas City. Dr. R. P. Lyman, of East Lansing, Mich., was elected National Vice-President, to fill the unexpired term of Dr. E. S. D. Merchant, who had left the United States. The other officers were re-elected.

H. PRESTON HOSKINS, Nat'l Sec'y.

## OKLAHOMA VETERINARY MEDICAL ASSOCIATION.

The above association held its annual meeting at the Kinkade hotel, Oklahoma City, on February 23d and 24th, 1915. The sessions were fairly well attended, and the harmony and unusual interest taken by the members present at this meeting convinced us that the veterinarians of Oklahoma have cultivated and developed a more professional interest in each other and in the profession. Never in the history of our state was there more need for the members of the veterinary profession to stand together for justice to all—special privileges to none.

The following program was enacted: *Strangles and its Sequelae,* by C. E. Steele, Oklahoma City; *Difficulties in Cryptorchid Castration,* by L. D. Brown; *The Steps the Local Veterinarian Should Take to Prevent the Spread of Hog Cholera in His County,* by T. P. White, Special Field Agent of the B. A. I., for Oklahoma, on Hog Cholera; *The Owner and the Veterinarian in Relation to Hog Cholera Serum and Hog Cholera Virus,* by John Eagle, of Kansas City; *Hematuria,* by Dr. Chichester, of Cordel, Okla.

President W. H. Martin, of El Reno, occupied the executive chair and conducted the meeting.

S. H. GALLIER, Secretary.

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IN the Cedar Rapids, Iowa, *Republican* of February 21, 1915, we read of the introduction into the Senate and House of a bill to amend the section of the Iowa law specifying the area that may be placed under quarantine by the Commission of Animal Health and prescribing the method of quarantine. It is referred to as Hull's Bill on Quarantine, and was introduced by Hon. H. E. Hull.

NAMED ON VETERINARY BOARD. Dr. C. J. Sigmond, of Pipestone, was appointed to-day to the State Veterinary Examining Board by Governor Hammond. He will succeed Dr. G. A. Dallimore, of St. Paul.—[St. Paul, Minn., *Dispatch,* of February 23, 1915].

# VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the date given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings. Secretaries are earnestly requested to see that their organizations are properly included in the following list:

| Name of Organization. | Date of Next Meeting. | Place of Meeting. | Name and Address Secretary. |
|---|---|---|---|
| Alabama Veterinary Med. Ass'n | Mar. 5-6-7, 1914 | Auburn | C. A. Cary, Auburn. |
| Alumni Ass'n, N. Y.-A. V. C. | June 10, 1915 | 141 W. 54th St. | P. K. Nichols, Port Richmond, N.Y. |
| Alumni Ass'n U. S. Coll. Vet. Surg. | April 15, 1915 | Washing'n, D.C. | C. R. Smith, Washington, D. C. |
| American V. M. Ass'n | Week beginning Aug 30. 1915 | Oakland, Cal. | Nelson S. Mayo, 4753 Ravenswood Ave., Chicago, Ill. |
| Arkansas Veterinary Ass'n | 1st Week Feb., 1916. | Little Rock | R. M. Gow, Fayetteville. |
| Ashtabula, Lake & Geauga Vet. M. A. | | Painesville, O. | R. A. Greenwood, Sec.-Treas. |
| Ass'n Médécale Veterinare Française. "Laval" | 1st and 3d Thur. of each month | Lec. Room, Laval Un'y, Mon. | J. P. A. Houde, Montreal. |
| B. A. I. Vet. In. A., Chicago | 2d Fri. each month. | Chicago | H. A. Smith, Chicago, Ill. |
| B. A. I. Vet. In. A., So. Omaha | 3d Mon. each month. | S. Omaha, Neb. | E. J. Jackson, So. Omaha. |
| Buchanan Co. Vet. Ass'n | Monthly | St. Joseph | F. W. Caldwell, St. Joseph, Mo. |
| California State V. M. Ass'n | December 10, 1913. | San Francisco | John F. McKenna, Fresno. |
| Central Canada V. Ass'n | Feb. and July | Ottawa | A. E. James, Ottawa. |
| Central N. Y. Vet. Med. Ass'n | June and Nov. | Syracuse | W. B. Switzer, Oswego. |
| Chicago Veterinary Society | 2d Tues. each month. | Chicago | D. M. Campbell, Chicago. |
| Colorado State V. M. Ass'n | May 28-29, 1915 | Fort Collins | I. E. Newsom, Ft. Collins. |
| Connecticut V. M. Ass'n. | Pending | New Haven | A. T. Gilyard, Waterbury. |
| Delaware State Vet. Society | Jan., Apl., July, Oct. | Wilmington | A. S. Houchin, Newark, Del. |
| Genesee Valley V. M. Ass'n | 2d week, July, 1913. | Rochester | J. H. Taylor, Henrietta. |
| Georgia State V. M. A. | Dec. 22-23, 1913 | Atlanta | P. F. Bahnsen, Americus. |
| Hamilton Co. (Ohio) V. A. | | | Louis P. Cook. Cincinnati. |
| Idaho Ass'n of Vet'y Graduates | | Idaho Falls | J. R. Fuller, Weiser. |
| Illmo Vet. Med. Ass'n. | Nov. 20, 1914 | E. St. Louis | L. B. Michael, Collinsville, Ill. |
| Illinois State V. M. Ass'n. | Dec. 3-4-5, 1914 | Chicago | L. A. Merillat, Chicago. |
| Indiana Veterinary Association | Jan. 14, 1914 | Indianapolis | A. F. Nelson, Indianapolis |
| Iowa Veterinary Ass'n. | | | H. B. Treman, Rockwell City. |
| Kansas State V. M. Ass'n. | Jan. 5-6, 1915 | Topeka | J. H. Burt, Manhattan. |
| Kentucky V. M. Ass'n. | Oct. & Feb. each year. | Lexington | Robert Graham, Lexington. |
| Keystone V. M. Ass'n. | 2d Tues. each month. | Philadelphia | Cheston M. Hoskins. |
| Lake Erie V. M. Association | Pending | Pending | Phil. H. Fulstow, Norwalk, Ohio. |
| Louisiana State V. M. Ass'n. | Sept., 1914 | Lake Charles | Hamlet Moore, New Orleans, La. |
| Maine Vet. Med. Ass'n. | April 14, 1915 | Waterville | H. B. Wescott, Portland. |
| Maryland State Vet. Society | Pending | Baltimore | John H. Engel, Baltimore. |
| Massachusetts Vet. Ass'n | 4th Wed. each month. | Young's, Boston. | W. T. Pugh, Southbridge. |
| Michigan State V. M. Ass'n. | Feb. 2, 3, 1915 | Lansing | W. A. Ewalt, Mt. Clemens. |
| Minnesota State V. M. Ass'n. | Jan. 13-14-15, 1915. | St. Paul | G. Ed. Leech, Winona. |
| Mississippi State V. M. Ass'n | 1914 | Vicksburg | J. D. Townsend, Louisville. |
| Missouri Valley V. Ass'n. | Feb. 2-3-4, 1915 | Kansas City, Mo. | Hal. C. Simpson, Denison. Ia. |
| Mississippi Valley V. M. Ass'n | Semi-Annually | Galesburg, Ill. | G. E. McIntyre, Alexis, Ill. |
| Missouri Vet. Med. Ass'n. | July, 1915 | St. Louis | Chas. D. Folse, Kansas City. |
| Montana State V. M. A. | Sept. 24, 25, 1913 | Helena | A. D. Knowles, Livingston. |
| Nat'l Ass'n B. A. I. Employees | 2d Mon., Aug., 1915. | New York, N. Y. | S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis. |
| Nebraska V. M. Ass'n. | 1st Mo. & Tu., Dec. '13 | Lincoln, Neb. | Carl J. Norden, Nebraska City. |
| New York S. V. M. Soc'y. | 1915 | Ithaca | H. J. Milks, Ithaca, N. Y. |
| North Carolina V. M. Ass'n. | June 23, 1914 | Wilson | J. P. Spoon, Burlington. |
| North Dakota V. M. Ass'n. | Week of July 20, 1914 | Fargo | A. F. Schalk, Agricultural College. |
| North-Western Ohio V. M. A. | Nov. 1913 | Delphos | E. V. Hover, Delphos. |
| Ohio State V. M. Ass'n. | Jan. 13-14, 1916 | Columbus | F. A. Lambert, Columbus. |
| Ohio Soc. of Comparative Med. | Annually | Upper Sandusky. | F. F. Sheets, Van Wert, Ohio. |
| Ohio Valley Vet. Med. Ass'n. | | | J. C. Howard, Sullivan. |
| Oklahoma V. M. Ass'n. | Pending | Oklahoma City. | S. H. Gallier, Norman. |
| Ontario Vet. Ass'n. | 1st Week in Feb. 1914 | Toronto | L. A. Willson, Toronto. |
| Pennsylvania State V. M. A. | March 2, 3, 1915 | Philadelphia | John Reichel, Glenolden. |
| Philippine V. M. A. | Call of President | Manila | David C. Kretser, Manila. |
| Portland Vet. Med. Ass'n. | 4th Tues. each month. | Portland, Ore. | Sam. B. Foster, Portland, Ore. |
| Province of Quebec V. M. A. | | Mon. and Que. | Gustave Boyer, Rigaud, P. Q. |
| Rhode Island V. M. Ass'n. | Jan. and June | Providence | J. S. Pollard, Providence. |
| South Carolina Ass'n of Veter'ns. | Pending | Pending | B. K. McInnes, Charleston. |
| South Illinois V. M. and Surg. Ass'n. | Aug. 3, 1915 | Centralia | F. Hockman, Iola. |
| St. Louis Soc. of Vet. Inspectors | 1st Wed. fol. the 2d Sun. each month. | St. Louis | Wm. T. Conway, St. Louis, Mo. |
| Schuylkill Valley V. M. A. | Dec. 16, 1914 | Reading | W. G. Huyett, Wernersville. |
| Soc. Vet. Alumni Univ. Penn. | | Philadelphia | B. T. Woodward, Wash'n, D. C. |
| South Dakota V. M. A. | July 1, 2, 1915 | Rapid City | S. W. Allen, Watertown. |
| Southern Aux. of Cal. S. V. M. Ass'n. | Jan., Apl., July, Oct. | Los Angeles | J. A. Dell, Los Angeles. |
| South St. Joseph Ass'n of Vet. Insp. | 4th Tues. each month | 407 Illinois Ave. | H. R. Collins, South St. Joseph. |
| Tennessee Vet. Med. Ass'n. | November, 1914 | Nashville | Jas. McMahon, Columbia. |
| Texas V. M. Ass'n. | Nov., 1913 | College Station. | Allen J. Foster, Marshall. |
| Twin City V. M. Ass'n. | 2d Thu. each month. | St. P.-Minneap. | M. H. Reynolds, St. Paul, Minn. |
| Utah Vet. Med. Ass'n. | Spring of 1914 | Salt Lake City. | E. J. Coburn, Brigham City. |
| Vermont Vet. Med. Ass'n. | | | G. T. Stevenson, Burlington. |
| Veterinary Ass'n of Alberta | | | C. H. H. Sweetapple, For. Saskatchewan, Alta., Can. |
| Vet. Ass'n Dist. of Columbia | 3d Wed. each month | 514 9th St., N.W | H. Stanley Gamble, 1329 Gallatin, Wash., D. C. |
| Vet. Med. Ass'n, Geo. Wash. Univ. | 1st Sat. each month. | Wash'ton, D. C. | J. M. Cashell, 2115 14th Street. |
| Vet. Ass'n of Manitoba | Feb. & July each yr. | Winnipeg | Wm. Hilton, Winnipeg. |
| Vet. Med. Ass'n of N. J. | July, 1915 | | E. L. Loblein, New Brunswick. |
| V. M. Ass'n, New York City | 1st Wed. each month. | 141 W. 54th St. | R. S. MacKellar, N. Y. City. |
| Veterinary Practitioners' Club | Monthly | Jersey City | T. F. O'Dea, Union Hill, N. J. |
| Virginia State V. M. Ass'n. | July 9-10, 1914 | Staunton | Geo. C. Faville, North Emporia. |
| Washington State Col. V. M. A. | 1st & 3d Fri. Eve. | Pullman | R. J. Donohue, Pullman. |
| Washington State V. M. A. | June, 1915 | Yakima | Carl Cosier, Bellingham. |
| Western N. Y. V. M. A. | June 24, 1914 | Buffalo | W. E. Frits, 358 Jefferson St., Buffalo |
| Western Penn. V. M. Ass'n. | 3d Thu. each month. | Pittsburgh | Benjamin Gunner, Sewickley. |
| Wisconsin Soc. Vet. Grad. | Feb. 10, 11, 1914 | Milwaukee | W. W. Arsberger, Watertown. |
| York Co. (Pa.) V. M. A. | June, Sept., Dec., Mar | York | E. S. Bausticker, York, Pa. |

# PUBLISHERS' DEPARTMENT.

*Subscription price, $3 per annum, invariably in advance; Canadian subscriptions, $3.25; foreign countries, $3.60; students while attending college, $2; Students in Canada, $2.25; single copies, 30 cents in U. S.* **Copy for advertisements should be received by 10th of month.**

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VACCINES PROPHYLACTIC AND CURATIVE form a most important part of the veterinarians stock to-day. THE COMPARATIVE VACCINE LABORATORIES, INC., whose advertisement appears on page 4 of the present issue, have a very interesting list.

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MANUFACTURING TO SUPPLY DEMAND: The Max Wocher & Son Company, of Cincinnati, Ohio, beg to announce that they are now devoting an entire floor in their new factory building to the manufacture and repair of veterinary instruments. This step became necessary to supply their large demand since the shortage of veterinary instruments became apparent and since the ports of Europe are closed on account of the war.

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SPRING-STEP RUBBER HORSE SHOES. An attractive name, but not nearly as attractive as the shoe. This shoe, illustrated in the Revere Rubber Company's advertisement on page 23 of this issue, is built on scientific principles peculiarly adaptable to the preservation of the healthy foot of the horse and the restoration of the defective foot, while at the same time furnishing the most efficient method of shoeing to prevent slipping on street pavement. It has a yielding, yet firm, contact with the foot, and also rubber contact with the pavement. Veterinarians should study the principles of this shoe.